The Journal

of the

Louisiana State Medical Society

$4.00 Per Annum, 35c Per Copy
Vol. 113, No. 8

AUGUST, 1961

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

Urologic Diagnosis in General Practice*

• In general practice, as well as in urology, the problems of diagnosis are greatly simplified by adherence to a routine plan of investigation. A complete urologic investigation has been reduced to nine successive steps, which, if carefully followed, will avoid the pitfalls and errors which can so easily occur in the management of urologic patients. The practical application of this plan is presented in detail.

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DOCTOR John Chalmers Da Costa once said, "Each one of us, however old, is still an undergraduate in the school of experience. When a man thinks he has graduated, he becomes a public menace".

The founders of the New Orleans Graduate Medical Assembly must have hearkened to his words. The excellent attendance at these meetings bespeaks the same spirit.

Diagnostic failures in urology, by both the specialist and the general practitioner, are almost always due to failure to follow an orderly plan of investigation. A complete urological investigation involves the carrying out in logical sequence of nine successive steps which do not permit short cuts or omissions. Any general practitioner can carry out these basic steps in his own office and can thereby make an accurate diagnosis in over ninety per cent of cases presenting symptoms referable to disease of the urogenital tract. By adhering to this specific routine the physician will avoid omitting any of the vital steps, and also avoid pitfalls and commission of errors that arise when they are not carried out in proper sequence.

The practical application of this plan is herewith presented in detail:

Outline of Routine Plan of Complete Urological Investigation

1. First Step. History—with emphasis on urological features. Symptomatology should be considered under three headings:

(a) General—such as chills, malaise, loss of weight, G. I. disturbance, rheumatic symptoms, etc.

(b) Urinary — frequency, burning, pain, polyuria, nocturia, urgency, pollakiuria, hematuria, pyuria, calcuria, dribbling, difficulty in starting stream, at-

* Presented at the 24th Annual Meeting of the New Orleans Graduate Medical Assembly, March 7, 1961, New Orleans.

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tacks of retention; diminution of force, forking of stream, incontinence, renal and ureteral colic.

(c) Sexual — impotence, premature ejaculation, painful ejaculation, chordee, hemospermia, diminished sexual power, incomplete erection, priapism, urethral discharge, a.m. drop, swelling, aching or pain in testicles, groins, perineum or rectum.

2. Second step. General physical examination.

Not always in uncomplicated venereal infections, but of great importance in other urological conditions.

3. Third Step. Kidney Palpation.

Fullness in loin or costovertebral angle.

Murphy's maneuver to elicit kidney tenderness.

1st, 2nd, 3rd degree mobility.

4. Fourth Step. Examination of External Genitalia.

(a) Anomalies

(b) Urethral meatus

(c) Penis (prepuce, glans, shaft)

(d) Venereal infections (discharge, ulcers) (if discharge: methylene blue stain to rule out G. C.)

(e) Scrotal contents

(f) Spermatic cord

5. Fifth Step. Examination of the Urine.

(a) Two glass test—(roughly differentiates lower and upper tract disease).

(b) Routine analysis of second glass:

1. Albumin
2. Sugar
3. Specific gravity
4. Reaction
5. Microscopic examination of sediment: pus cells, red blood cells, organisms, casts, crystals, epithelial cells.
6. Urine culture, Gram stain, acid fast stain, guinea pig inoculation, etc. as indicated.

6. Sixth Step. Rectal Examination.

(a) Sphincter tonus, fissures, hemorrhoids, etc.

(b) Palpation of prostate and seminal vesicles. Note size, shape, consistency, tenderness, notch, median furrow, and lateral sulci.

(c) Stripping of vesicles and massaging of prostate with microscopic examination of secretion for pus cells, lecithin bodies, and motile sperm.

7. Seventh Step Total Renal Function.

(a) Phenolsulphonephthalein output —1 hr. I.V.

(b) Blood chemistry when indicated.

8. Eighth Step. Roentgenography.

Plain plates, of kidneys, ureters and bladder in all cases with symptoms pointing to upper tract involvement, and in all cases of suspected malignancy of the prostate for evidence of metastasis to pelvic bones and lumbar vertebra. I.V. urography when indicated.

9. Ninth Step. Cystoscopy.

(a) Endoscopy or urethroscopy.

(b) Cystourethroscopy. Residual urine determination.

(c) Ureteral catheterization.

(d) Separate urine collection and studies:

1. Microscopic examination.
2. Cultures. Sensitivity Tests.
3. Acid fast stains and guinea pig inoculation.

(e) Differential renal function (phthalein test).

(f) Cysto-uretero-pyelography.

First Step. The History

To stress the basic importance of a careful history is superfluous because it is fundamental in all medical school teaching.

The occurrence of actual chills must be differentiated from chilly sensations. Whenever fever occurs as a result of disease in the urogenital tract, whether or not accompanied by true chills, look for its source in the kidney, prostate or epididymis. Cystitis alone does not cause fever.

It is important to realize and evaluate the role of gastrointestinal symptoms in diseases of the urinary tract. Their association is common as a matter of reflex disturbance or toxic manifestation. Uremia may produce anorexia and nausea.

Often gastrointestinal symptoms occur without any symptoms referable to the urinary tract. A personal case suffered for four years from attacks of nausea, vomiting and ileus before it was discovered that she harbored a small calculus in her left renal pelvis which caused periodic obstruction.

Careful inquiry into urinary symptoms is of vital importance. The normal individual should not have to get up at night to void unless from excessive fluid intake during the evening. For the sake of ready reference it is convenient to denote the number of times a patient voids during the night (nocturia) and day (diuria) by the symbols

$$\frac{\text{N-0-1}}{\text{D-3-4,}}$$

this being the norm. Nocturia should be noted particularly since it is usually the first symptom to occur in prostatism (prostatic obstruction).

A mistake frequently made is to treat the symptom "frequency" as evidence of simple cystitis. A basic law in urology is that no patient with frequency should be treated with urinary antiseptics for more than a week without the benefit of thorough urological investigation. One patient of this type, whom I eventually saw, had been treated symptomatically in this fashion for a year and a half without improvement. A thorough urological study then revealed far advanced tuberculosis of one kidney, a contracted tuberculous bladder, and hydronephrosis of the opposite kidney due to intramural constriction of the ureter.

Hematuria is a most important symptom too often neglected, particularly if transitory. Painless hematuria is of far greater import than painful hematuria. The latter, usually initial or terminal with dysuria may indicate only an acute cystitis or posterior urethritis, whereas painless hematuria is often the only symptom of a malignant growth some where in the urinary tract. The treacherous nature of transitory or intermittent hematuria must be recognized, since tumors will sometimes bleed only once and not again for a year or more. By that time they may be incurable.

Second Step. General Physical Examination

A complete physical examination, as medical students are taught to do, is essential in all urological cases except the obviously local conditions such as venereal infections and minor local conditions involving the gentalia. In surgical cases a complete physical examination assumes more importance in order to discover systematic evidence of tuberculosis, malignancy, and other conditions which might originate in the urogenital organs, or involve them secondarily. Many urological patients, particularly prostatics, are geriatric problems as well, so that evaluation of cardiovascular status is important. Neurological evaluation is sometimes very important. Occasionally the first symptoms of neurological disease are those of a neurogenic bladder. In one patient whose initial symptom was bed-wetting (enuresis) the cause was found to be C S lues.

Third Step. Kidney Palpation

Special attention is given to kidney palpation. Tenderness or fullness in the loin or costovertebral area may be detected. Murphy's maneuver to elicit kidney tenderness is useful. This consists in placing the palm of the hand over each kidney area posteriorly and giving it a thump with the fist of the other hand. In acute kidney conditions the response of the patient is dramatic, but it is well to recognize its limitations. A kidney may be completely destroyed and devoid of all function without localizing signs or symptoms. Even with acute pyelonephritis and high fever there may be no kidney pain or tenderness.

One cannot be too careful in assessing pain or tenderness in the kidney region. Pains in the back, flank or loin are often difficult to diagnose. The prodromal stage of herpes zoster can be misleading, as well as radiculitis and orthopedic conditions. The operation of nephropexy for nephro-

ptosis has acquired a bad name because too often it has been done for movable kidneys without relief of symptoms. It should be embarrassing for the surgeon to perform a nehpropexy and then have the patient return later with the same pain in the back.

Fourth Step. Examination of External Genitalia

Errors in diagnosis in organs so exposed and accessible as the male external genitalia would seem to offer little difficulty, yet there are many pitfalls. Care, especially in infants, should be taken to rule out congenital stricture or stenosis of the urethral meatus. Unrecognized, this can lead to severe damage in a few years through back pressure to the whole urinary tract.

Do not accept the patient's statement as to the presence or absence of urethral discharge. Carefully strip the urethra and note if any is present. If pus cells are found a stained smear should be examined and culture made when indicated. A simple methylene blue stain and microscopic examination with oil immersion lens is ordinarily sufficient to identify the gonococcus. Trichomonas organisms can be seen under low power in a wet smear using normal saline.

All types of ulceration occur about the genitals, and they should all be considered luetic until proved otherwise. Syphilis is a great imitator and often manifests itself in bizarre ways quite different from the typical Hunterian chancre. Skin rashes peculiar to the genitalia are often puzzling and their correct diagnosis may demand the help of the dermatologist. In a recent case seen by the author the patient had a persistent rash involving his scrotum which did not disappear with ordinary medication. On referral to a dermatologist it was found to be secondary lues. The patient was a homosexual who had the primary lesion on his anus.

The scrotal contents should be individually isolated and carefully examined. Too many errors are made in identifying the painless swelling of the testicle which turns out to be a malignant tumor. One reason, perhaps, is that they occur in young men usually between 20 and 40 years of age. Their extreme degree of malignancy makes early diagnosis most important. Recently, my resident in routinely checking a patient found a small area of induration in one testicle which had not been noticed by the patient. Exploratory operation revealed a seminoma. Orchiectomy was done with a good prognosis because of early recognition. Tumors usually, but not always, cannot be transilluminated, while the opposite is true for hydroceles and spermatoceles. While malignancies usually arise in the testis, in the exceptional case they may arise in the epididymis or spermatic cord. Inflammatory conditions may or may not be painful, and, if tuberculous, may not subside. A useful urological axiom is: if a scrotal mass does not subside spontaneously within a period of two to four weeks it should be explored. In other words, *in case of doubt, operate.* Torsion of the testicle occurs in the very young, and should be promptly differentiated from acute epididymitis or orchitis, because only prompt surgical intervention will save the testicle. In the female a vaginal and pelvic examination should be included at this stage.

Fifth Step. Examination of the Urine

In my opinion, it is a grievous error for any doctor to send a urine specimen to a laboratory for routine analysis instead of doing it himself. Conical sedimentation glasses, which can be obtained in most any liquor store as beer glasses for about 35 cents a piece, should be an integral part of every general practitioner's office set-up.

The patient should be instructed to void in the two glasses. This is a simple and useful test which roughly differentiates *upper* and *lower* urinary tract disease For example, if the first glass is cloudy with pus cells or other elements, and the second is clear, it is probable that one is dealing with lower tract disease. As a rule, the second glass is used for routine analysis because it will be uncontaminated

by lower tract elements. The same holds true for the female. She may void in two emesis basins, or at the time of examination a direct catheterized specimen may be obtained. The urologist frequently has patients referred to him for pyuria which turns out to be the result of vaginal contamination.

Sensitive paper tests are now available, such as albustix, combistix, testape and nitrazene paper which can be performed in less than a minute. The advantage of "on the spot" urine analysis is shown in the determination of pH. The lab report is worthless because the urine is not tested immediately and in a very short time the hydrogen ion concentration changes to the alkaline side. Examination of the centrifuged urine sediment in the microscope should be done by the physician in his office. He can readily determine the presence or absence of the usual elements, and if desired, make methylene blue or Gram stains for organisms and cellular structures. It is a surprising fact that tumor cells may be often identified, or at least suspected, by simple methylene blue stain and study of cell morphology.

After the physician has carried out his own urine studies he may then see fit to send the sterile specimens to the laboratory for more detailed studies, such as special stains, cultures, and sensitivity tests. The specimen may be collected from the patient from midstream voiding, or aseptic catheterization, in a sterile bottle or test tube and taken immediately to the laboratory.

It is important for the physician to remember that normal urine does not rule out urinary tract disease. A great variety of conditions may exist with normal urine, e.g., malignancies, hydronephrosis, strictures, trigonitis, polyps, Hunner ulcer or interstitial cystitis, and bladder neck obstructions such as benign prostatic hypertrophy, median bar and neurogenic bladder. The finding of bacteriuria is always important because the normal kidney does not excrete bacteria. An old burnt out pyelonephritis may exist with little or no pyuria but bacteria will usually be found in the urine. Sterile pyuria should make one suspicious of tuberculosis.

Sixth Step. Rectal Examination

There is an old but true saying that many a diagnosis has been missed because the physician failed to stick his finger in the rectum. When done, the examination is too often cursory and unsatisfactory because of failure to note the condition of the anus, the tone of the sphincter and finally the condition of the pelvis itself before examination of the internal genital apparatus. I recently asked one of my residents to do a rectal palpation. On completion of his examination he told me correctly of the findings in the prostate and seminal vesicles, but he had entirely missed feeling a readily palpable carcinoma of the rectum above this level. I am sure he will not in the future make a similar mistake.

A certain amount of experience is necesary in order to recognize enlargement of the prostate and, especially, malignancy. In many cases the presence of cancer is equivocal or unsuspected so that one cannot be too careful in evaluating this condition, particularly since it is so frequent in men past fifty years of age and increases with each decade thereafter. One must depend in questionable cases on open or needle biopsy for diagnosis.

It is well to remember, too, that the prostate may feel normal in size, shape and consistency on rectal palpation and yet may be the site of middle lobe hypertrophy, median bar formation, or chronic prostatitis. Too often we find the physician reporting the prostate normal on rectal palpation without any attempt having been made to massage the gland and strip the seminal vesicles for secretion to be examined under the microscope.

Chronic prostatitis is often a silent disease existing as a latent focus of infection which can give rise to a variety of symptoms both local and referred. I feel sure that many transurethral resections are being done in certain sections of this country that could be much better managed by some judicious prostatic massage treat-

ments, perhaps supplemented in certain cases by dilatation with sounds and an occasional installation of weak silver nitrate.

Prostatic massage requires a certain training and technic in order to obtain secretion easily without trauma, something akin to learning how to milk a cow. The prostate must not be rubbed. The secretion is obtained by a rolling motion of the palmar surface of the index finger from the sides toward the middle. This is followed by stripping from above downwards of the seminal vesicles. It is of course essential that the patient void prior to massage in order that the secretion will not be contaminated by purulent discharge in the urethra.

Following these examinations one can now catheterize the patient for the determination of residual urine, if bladder neck obstruction is suspected or must be ruled out. Catheterization can be safely done if ordinary aseptic precautions are observed with avoidance of trauma.

Seventh Step. Total Renal Function

Completion of the sixth step ends the investigation of the lower tract and further steps may not need to be carried out if the diagnosis has now been made and the disease is limited to this region. However, many conditions exist which are combined system (upper and lower tract) disease so that a complete urological investigation is usually indicated, not only for the safety of the patient but also as a safeguard for the physician in order that he may not get caught in some unsuspected omission.

Most urological studies should be *complete*, and by a *"complete urological investigation"* we mean all nine steps. For example, when completion of the sixth step shows that we are dealing with a benign hypertrophy of the prostate, is it necessary to go further with our investigations? The answer is "yes", because upper and lower urinary tract diseases are so closely related, and one rarely exists without involvement of the other. We must know the status of the renal function in prostatic obstruction because of possible damage to the kidneys from back pressure. In addition, roentgenological and cystoscopic examination should usually be done in order not to overlook some silent coincidental lesion in the upper tract of serious portent.

The seventh step, which is carried out as an introduction to the upper urinary tract, is the determination of *total renal function*. For practical purposes the PSP test is of the greatest value, and is easily carried out in any general practitioner's office. It consists simply of the intravenous injection of 1 cc. of phenolsulphonephthalein (PSP) and collecting the urine one hour later. The specimen is alkalinized with a few drops of sodium hydroxide, 15 per cent solution, and read with a standard Dunning colorimeter. The normal output for one hour is approximately 60 per cent. Blood chemistry determinations may be indicated for supplementary information, but it must be remembered that the PSP test is a far more sensitive indicator of function. The blood chemistry in renal impairment ordinarily shows no elevation until the PSP output drops to 30 per cent or less.

Eighth Step. Roentgenography

Although a plain scout film (KUB) may be taken at an earlier stage, it is usually advisable to defer intravenous urography until after the determination of renal function. Two pitfalls are thus avoided: If renal function is poor, intravenous urography will be time and money wasted because the urinary tract will not visualize, and furthermore the dangers of toxic reaction inherent in this procedure are magnified by the impairment of function.

Ninth Step. (Instrumental) Cystoscopy

The ninth and final step in a complete urological investigation done in an orderly manner is the instrumental examination as outlined. This is where I want to emphasize an important point with respect to pitfalls and errors in urologic diagnosis. Too often, we see a patient being subjected to a cystoscopy before

the crucial preliminary eight steps have been carried out. This disregard for orderly investigation may get the physician into some very unenviable situations. In urology there are no diagnostic short cuts, and one cannot jump at conclusions in the study of urologic patients without getting into dilemmas which may prove embarrassing to the doctor and damaging to the patient. Do not undertake the final step (No. 9) without giving due consideration to the preliminary eight steps. The ninth step, which includes cystourethroscopy, supplemented by ureteral catheterization and retrograde pyelography, is indicated whenever symptoms and findings involving the urinary tract are not explained by non-instrumental study.

We are proud of the fact that in the field of urology we have a highly developed instrumental armamentarium which permits precision in both diagnosis and treatment to a very high degree. Let us develop the necessary skill and judgment to enable us to use these instruments with wisdom and discretion.

The Influence of Inundation on Health

Stanford E. Chaille, M. D.

1881—Dr. Joseph Holt, Sanitary Inspector, First District, reported * * * as follows: "The signal event of the year was the great overflow from the Lake of a large area * * * I carefully inspected the ground, and was especially struck with the fact that the heretofore dirty backyards, streets, and even houses, had the appearance of having enjoyed a thorough washing out, and I saw a dozen dead animals and heard of a man who had seen a dead fish. The event of the summer would seem to suggest an overflow as a providential sanitary measure."

Newer Diuretic Evaluations for Obstetric And Gynecologic Conditions*

• A classification and evaluation of the old and newer diuretics, together with studies on the results of a new diuretic administered to pregnant patients.

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RECENT years have seen a new awakening in the clinical and pharmacological research for new and more potent diuretic agents. The clinician is now faced with the problem of choosing and selecting the diuretic agent that will best fulfill the therapeutic needs of the patient. We are now in the throes of the race for diuretic supremacy but this confusion in selecting a diuretic agent need not cloud our thinking as to how the diuretic must be evaluated. This discussion will be limited to some of the diuretic agents that may be useful in Obstetrics and Gynecology and will encompass the currently available agents as well as a diuretic that has not yet been released for general use.

Classification of Diuretics

Figure 1 illustrates the broad general group of diuretic agents that have been used both in the past and are presently used in the field of Obstetrics and Gynecology. These drugs are ammonium chloride, mercurial compounds, benzothiadizines, and aldosterone antagonists. The route of administration in these groups differs in that the mercurial compounds occupy an effective position if given parenterally, whereas the other groups of drugs are administered orally. The electrolytes most involved when this diuretic action occurs are sodium, chloride, and potassium. The degree of potassium wastage has caused the greatest concern among the investigators studying these drugs. The aldosterone antagonists occupy the distinct position of causing a retention of potassium when saluresis occurs. Ammonium chloride also occupies a different role than either the mercurial or benzothiadizine groups in that the loss of potassium is relatively great, however, the period of effective diuresis lasts but for three to four days in spite of continued administration. Both the mercurial and benzothiadizine groups cause continued potassium excretion as long as the diuretic agent is administered. The mercurial diuretics occupy the cornerstone of diuretic therapy and serve as standards against which a comparison is made of the newer diuretic agents.

DIURETICS	Route of Administration	Electrolytes Excreted		
		Na^+	Cl^-	K^+
Ammonium Chloride	Oral	✓	✓	✓
Mercurials	Parenteral	✓	✓	Variable
"Thiadiazines"	Oral	✓	✓	Variable
Aldosterone Antagonists	Oral	✓	✓	Retained

Figure 1.—Broad general groups of diuretic agents used in Obstetrics and Gynecology. The agents, route of administration, and electrolytes excreted are contrasted.

Action of Diuretic Groups

Ammonium Chloride—This acidifying salt makes use of the ammonium ion producing property of the kidney. It supplies excess anions leaving chloride to be excreted that takes with it sodium resulting in saluresis. The first four days until ammonia ion production by the tubules has reached its peak, saluresis occurs; there-

* Presented at the Eighty-first Annual Meeting of the Louisiana State Medical Society, May 10, 1961, New Orleans.

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‡ This work was supported by a grant from the Ciba Pharmaceutical Products, Inc., Summit, New Jersey.

after, sodium is protected and no diuresis occurs. There is also a proportionate large excretion of potassium during the four days of diuresis.

Mercurials—The site of action is on the proximal renal tubules.[1] The effect on the proximal renal tubule results in an increased sodium and chloride excretion. Tolerance to the mercurial group of diuretics usually does not develop. The onset of action is in two hours with the maximum diuresis seen in six hours with most of the mercury being eliminated by twenty-four hours.[2] Parenteral administration is necessary for effectiveness. These drugs are not contraindicated in preeclampsia.

Benzothiadizine Group—Figure 2 lists some of the currently "newer" diuretic agents available. The trade name, generic name and tablet size is also given. The action of acetazolamide (Diamox) is by inhibition of the enzyme carbonic anhydrase that interferes with the ability of the renal tubule to conserve sodium, bicarbonate, and potassium. This drug probably causes more of a potassium depletion than any of the other drugs in this group. Its peak action is seen at six hours and diuresis may last as long as twelve hours. Tolerance occasionally develops and for this reason intermittent therapy is advisable.[2]

"Thiadiazines" and Related Diuretics

Trade Name	Generic Name	Tablet Size-mg.
Diamox	Acetazolamide	250
Diuril	Chlorothiazide	500
Esidrix Hydrodiuril Oretic	Hydrochlorothiazide	50
Naqua	Trichlorothiazide	4
Ademol	Flumethazide	50B
Saluron	Dihydroflumethazide	50
Naturetin	Benzhydroflumethazide	5
Hygroton	Chlorthalidone	100
Navidrix	Su 6341	0.5
Metahydrin	Trichlormethazide	4
Enduron	Methyclothiazide	5
NaClex	Benzthiazide	50

Figure 2.—The trade name, generic name, and tablet size of the "newer" oral diuretics are listed. Note generic name and addition of groups to parent molecule resulting in milligram size of tablet decreasing.

The remaining diuretic agents listed in this group share much in common in their pharmacologic action. Figure 3 summarizes the following information of diuretics in this group. They behave similar to the mercurial group in that tolerance usually does not develop and their site of action is the proximal renal tubule. Their primary action is a loss of sodium and chloride with proportionately less loss of potassium. Most of these drugs are slightly more potent than the mercurial diuretics. Practically speaking this group of drugs displays no major difference as to the amount of salt or potassium excreted. They share in common certain characteristics, namely, they are powerful diuretic agents but occasionally cause adverse reactions.

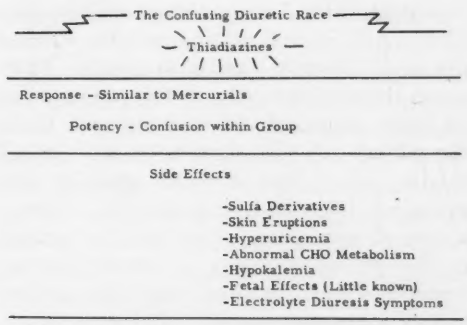

Figure 3.—A summary of the "Thiadiazine" diuretics as to their response, potency, and side effects.

These adverse reactions may be of gastrointestinal origin manifested by nausea, vomiting, and occasionally diarrhea or certain skin eruptions. They may cause alterations in carbohydrate metabolism mainly elevated blood sugar levels or diabetic like glucose tolerance curves. They also may cause hyperuricemia and precipitate gouty attacks in patients that are predisposed to this condition.

The onset of action of these drugs usually begins in two hours with a peak level around four hours after administration. Diuresis may continue for eighteen to twenty-four to thirty-six hours. Chronic administration of these drugs may result in hypotension [4, 5] which has been attributed to be due to either the hypovolemia or a blockage of the action of norepinephrine.[2] Diuretic therapy in the pregnant patient does not cause hypotension.

Aldosterone Antagonists—Spironolactone (Aldactone) is one of the newest group of diuretic agents available. They exert their effect only in the presence of elevated levels of aldosterone and block the effect of aldosterone on the distal tubule cells.[2] The diuresis seen in this group of drugs is a salt diuresis without a loss of potassium. The onset of action in this group of drugs is rather slow as sometimes two to four days are needed before a diuresis occurs.

Evaluation of a Diuretic Agent

Before we can intelligently assess the value of a diuretic agent we must first know what effect restriction of salt and bedrest have upon a patient as these are common therapeutic modalities. Figure 4 [10] is abstracted from a double-blind study and illustrates one of the problems of diuretic evaluation. The black portion of the bargraph indicates an excellent diuretic response that was arbitrarily designated as a weight loss greater than 4 pounds in a week. The stippled bargraph indicates a weight loss of at least 1 pound in a week.

It can be seen that a placebo medication will result in one patient out of ten achieving a 4 pound weight loss in a week and four patients out of ten achieved at least 1 pound weight loss in a week. These patients studied were pregnant patients in the last trimester and this response to the placebo medication may indicate that the patient is cognizant of the seriousness of her condition and will possibly restrict her sodium intake and will follow her suggested dietary regimen. This also means that if a diuretic agent is employed a weight loss of more than a pound a week should be seen in more than 40 per cent of patients. If this does not occur the diuretic medication is ineffectual, or, the indication for the medication was not secure.

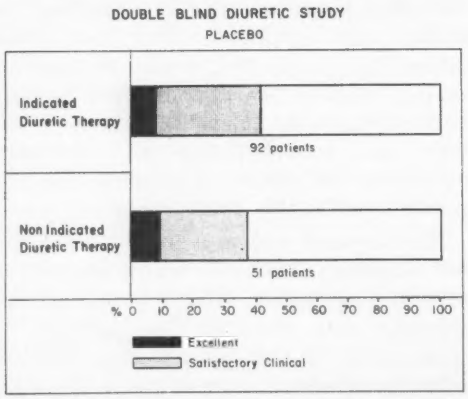

Figure 4.—Summary of results in a Double Blind Diuretic Outpatient Study. The black portion of the bargraph indicates a weight loss of more than four pounds in a week, whereas the stippled portion indicates at least a one pound weight loss in a week.

Figure 5 [11] is a balance ward study on a group of normal patients near term illustrating the efficacy of a low salt diet

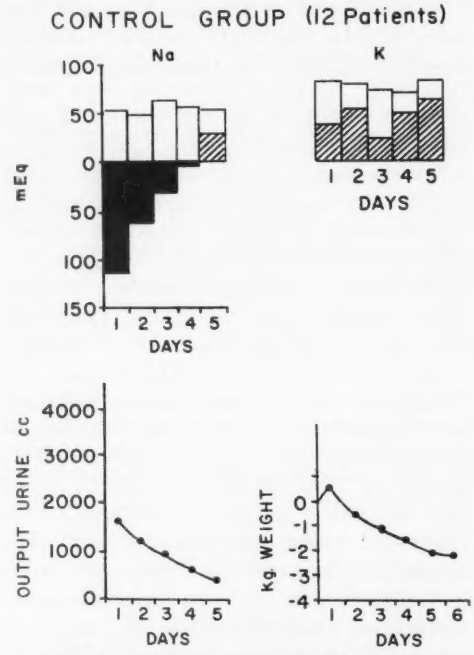

Figure 5.—Balance ward study illustrating the efficacy of bed rest and a low salt diet. They were normal nonedematous pregnant patients in the third trimester.

(1,000 grams) along with bedrest and bathroom privileges. A normal pregnant patient that is not edematous under this regime should lose at least 2 kg. of weight in one week.

Figure 6 [10] illustrates the response that can be anticipated if a diuretic agent is added to this regime in the normal non-

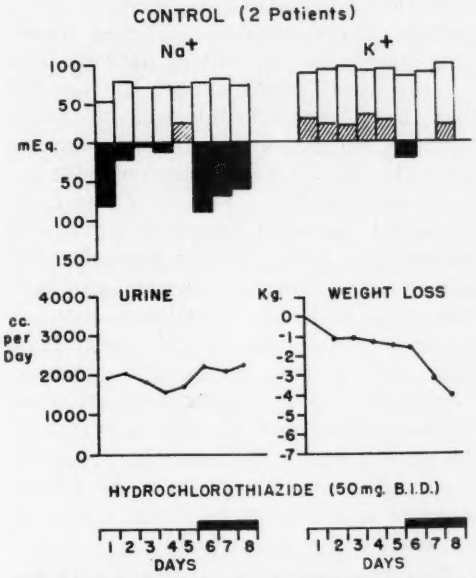

Figure 6.—Balance ward studies on normal nonedematous patients in the third trimester. Hydrochlorothiazide is added to effect further diuresis and weight loss.

edematous patient where an additional 2 kg. weight loss is seen for a total of 4 kg. weight loss over a seven to eight day study period. The edematous patient or the patient who has fluid retention obviously should lose more than the normal patient under the same conditions for the diuretic agent to be of value. These studies again emphasize the beneficial effect of a low salt diet and bedrest in the pregnant patient as a means of achieving diuresis and can be used as guideposts to evaluate diuretic agents.

In these patients studied it should be noted that potassium excretion was not in excess of intake. However, the problem of potassium depletion may be apparent in the patient who has marked edema and fluid retention and has a massive diuresis.

Some obstetricians use the uric acid determination as a guide in the toxemic patient. Since the advent of the benzothiadizine group of diuretics this particular determination is no longer valid if the patient has been on this group of diuretics. Hyperurecemia is more frequently seen after chronic administration of these drugs but may be seen after the administration of a single dose.[12]

An evaluation of the adverse symptoms attributable to diuretics should be understood. Patients achieving a good diuresis may complain of symptoms that are referable to an electrolyte diuresis, namely, fatigue, weakness, leg cramps and occasional nausea. These symptoms are not adverse symptoms to the diuretic but are symptoms referable to electrolyte diuresis. Acute symptoms that are referable to adverse drug reactions are primarily of gastrointestinal origin. Skin eruptions may rarely occur.[13] There is no consistent reaction of one specific diuretic agent in this group to another. Therefore, if adverse symptoms are seen with one agent another diuretic agent may be used with caution.

Hypokalemia is of concern to many investigators. This condition is seen primarily in patients who have been on diuretic medications over a long period of time or in patients who have a low potassium reserve and have a massive diuresis. The correction or prevention of hypokalemia can be by the oral administration of potassium chloride or by adjunctive dietary measures with foods that are high in potassium, namely, prune juice, orange juice and bananas. Some of the diuretic medications now contain added potassium and the medications we have tested with 1,000 mg. of potassium added have caused no untoward gastrointestinal effects and have been tolerated well by patients.

The fetal effects of the thiadiazine group of diuretics is unknown and this certainly is a field for future research. Whether these agents affect the fetal kidney and the status of the amniotic fluid is as yet unknown.

Figures 7, 8, and 9 refer to a study of a new diuretic agent that is not yet released on the market and is known as Cyclopenthiazide (Navidrix—Su8341). Figure 7 illustrates the response of a small number of pregnant patients in the last trimester to this medication. The diuretic medication was used in these patients for

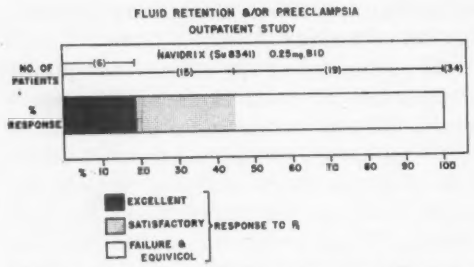

Figure 7.—Summary of Outpatient Study on patients with abnormal fluid retention or preeclampsia. The black portion of the bargraph indicates at least a four pound weight loss in a week. Navidrix dosage was 0.25 mg. b. i. d. for two days, then 0.25 mg. daily for three days.

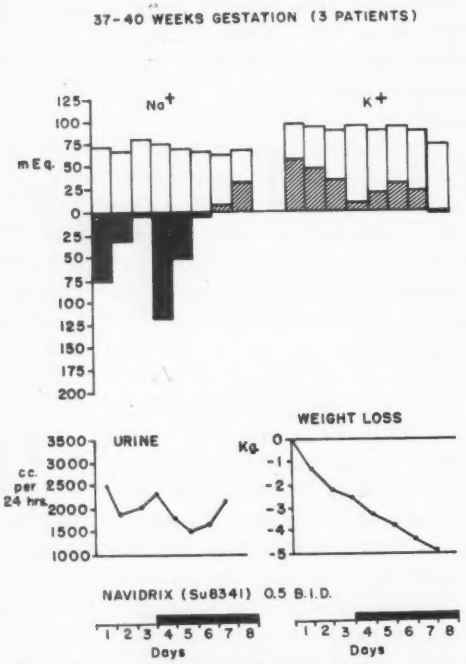

Figure 8.—Balance ward studies using a new diuretic, Navidrix (SU8341), on pregnant patients. Good diuresis is seen after zero balance was achieved. Dosage schedule is b. i. d. as contrasted to every day in Figure 9. The dosage schedule in figures 8 and 9 are roughly twice that of Figure 7.

fluid retention or preeclampsia. The response of these patients to the diuretic agent in the dosage used (0.25 mg. b. i. d. for two days then 0.25 mg. daily for the next three days) illustrates that roughly 2 patients out of 10 had an excellent response which was termed a weight loss of more than 4 pounds in one week. A satisfactory clinical response was seen in approximately 45 per cent of patients during the week's study period. It was felt that this dosage schedule was not sufficient to achieve a satisfactory diuresis when the results were compared with hydrochlorothiazide.[4, 5] Figures 7 and 8 indicate balance ward studies on a group of patients at a higher dosage schedule. The balance ward consisted essentially of bedrest with bathroom privileges, distilled water to drink and special weigh-back diets of known electrolyte content. Twenty-four hour urines were collected for electrolytes and the clinical status of the patient was evaluated daily. A satisfactory diuresis is seen when the dosage schedule is increased to 1 mg. a day (1 mg. daily or 0.5 mg. b. i. d.).

This drug compares favorably with hydrochlorothiazide except that relatively more potassium excretion was noted. However, this potassium excretion pattern was still not in excess of intake. The two dosage schedules (1 mg. daily or 0.5 mg. b. i. d.) show only minor differences in total diuresis during the balance ward studies. It would seem that a single daily dose of 1 mg. of Cyclopenthiazide (Navidrix) is the schedule of choice. The weight loss in both groups at the end of the study period is similar.

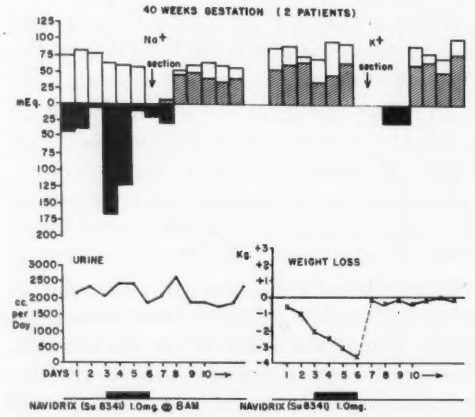

Figure 9.—Balance ward studies using a single daily dose of Navidrix (SN8341). More saluresis is seen at this dosage schedule.

Discussion

The choice of a diuretic agent in the field of Obstetrics and Gynecology will find use in gynecology in the patient who has premenstrual edema and premenstrual tension as well as the patient who has symptomatic chronic cystic mastitis with midcycle painful breasts. The judicious use of diuretic agents at this time will often alleviate or lessen the symptoms. The etiology of this premenstrual fluid retention is obscure but the antidiuretic hormone may be involved.[14] The diuretic medication should be given three to five days before the menses and continued through the first day of the menses. The dosage of the diuretic medication can be altered by having the patient observe her daily weights.

The main use of the diuretic agents is seen in the field of obstetrics and here the pregnant patient who has fluid retention may be treated effectively with these new oral diuretic medications. They are most helpful in controlling the edema seen in the toxemias of pregnancy and may also play a role of questionable value in patients who have hydramnios. The patient who elects not to nurse and has postpartum breast discomfort or postpartum edema can also be treated effectively with these agents. Few problems will be encountered with short term (less than a week) diuretic therapy except for a rebound weight gain. This rebound weight gain can be avoided by gradually tapering off the diuretic medication. Maximum diuresis can be anticipated by the second to fourth day of therapy and hereafter the diuretic dosage can be decreased.

The word potency is often used in discussing these newer diuretic medications. The word "potency" apparently is a key word to the male species. It is used frequently to compare one diuretic agent to another. The main emphasis in understanding should be that one diuretic agent essentially compares favorably to another diuretic agent in the tablet size that is available. The "potency" of the newer diuretic agents concerning mg. size is now delegated to the ingenuity of the pharmacologist or chemist in altering the basic structure of the molecule. Alterations of the basic molecule thus far have not resulted in major significant advantages of one diuretic agent over another. I would urge physicians that use diuretic agents to familiarize themselves with one or two particular diuretics; know the contraindications and indications of these agents instead of using each new diuretic agent that is marketed. At the present time they are all very similar as to their diuretic efficacy and all are extremely "potent" useful diuretics. None of the diuretics are without certain hazards and it behooves each of us to be aware of the problems that can be encountered in patients that are given diuretic medications.

Conclusions

1. Diuretic agents that are useful in the field of Obstetrics and Gynecology have been enumerated.

2. It is necessary to know the response of a placebo medication, low salt diet, and bedrest before a diuretic agent can be evaluated as to its efficacy.

3. The results of a new diuretic agent, Cyclopenthiazide (Navidrix—Su8341) are given on outpatients and balance ward studies. This diuretic agent has therapeutic efficacy at a higher dosage schedule. This was confirmed by balance ward studies.

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Extracts from an Old History of Louisiana

Translated by Thomas Layton, M. D.
and read before the Orleans Parish Medical Society
June 26, 1882

"There are but few days on which the sun does not shine in Louisiana; the rain falls only as the result of thunder storms; bad weather does not last long, and all traces of the same disappear in half an hour; the dew is, however very copious and takes the place of rain. It will, therefore be believed without difficulty, that the atmosphere is perfectly healthy; the blood is good; in that country men enjoy excellent health, are liable to but few diseases during their prime, and are not decrepit in old age, which is much greater than in France. Life is long and agreeable in Louisiana for all who abstain from debauchery. (Histoire de la Louisiane par M. Le Page du Pratz, Paris, 1758)

New Orleans M. & S. J. 10:241, (October) 1882.

Acute Renal Failure In Obstetrical Patients

• This is a serious though infrequent complication of obstetrical patients. There were six deaths in a series of eighteen patients over a period of eight years on the L.S.U. Division of Obstetrics.

JAMES G. MULE, M. D.
CHARLES H. STEWART, M. D.
New Orleans

ACUTE renal failure is a serious though infrequent complication of obstetrical patients. While kidney failure is strongly suspected whenever the urine output decreases hourly (20 cc. or less), the diagnosis is established in the presence of anuria or a reduction in urine volume to less than 400 cc. for the preceding twenty-four hours.

In the eutopic obstetrical environment, in the absence of hypertensive toxemia, abruptio placenta, obstetrical hemorrhages, infection, obstetric shock, and incompatible blood transfusions, this complication of the kidneys would be extremely rare. However, on the L.S.U. Division of Obstetrics at Charity Hospital in New Orleans, the incidence of toxemia is 17 per cent in the overall predominantly Negro delivery population. A review of the obstetrical records reveals that abruptio placenta is diagnosed twice as often in these patients as in the general obstetrical population.[1] These obstetrical complications, namely toxemia and abruptio placenta, are implicated individually or in combination in the majority of patients who develop acute renal failure on this service. It becomes obvious that this syndrome is of numerical importance here since this service is responsible for approximately 9,000 deliveries per year.

Although patients with transitory renal failure, i.e. less than forty-eight hours duration, are not included in the series of patients presented in this paper, an outline defining acute renal failure by duration is presented (Table 1). Though it is

TABLE 1
ACUTE RENAL FAILURE IN OBSTETRICAL PATIENTS

I.	Functional (Duration 24-48 hours)
II.	Organic
	A. Temporary (48 hours or more)
	B. Permanent

probable that transient oliguria is a functional phenomenon, the presence of organic disease cannot be excluded since renal tissue studies were not done on these patients. The time period of forty-eight hours, arbitrarily chosen to delineate functional from organic causes of oliguria, is based upon complete recovery in this short period. In these patients, there is an absence of clinical and laboratory changes characteristic of the gradual increase in daily urine volumes associated with anatomic lesions of the kidneys. The patients usually exhibiting this "short term" oliguria are those manifesting an acute decrease in plasma volume (hemoconcentration) often resulting from hyperemesis gravidarum, heat exhaustion, sepsis and severe acute toxemia (often eclampsia). Other patients with decreased cardiac output secondary to heart failure or shock resulting from severe hemorrhage or adrenal failure also manifest oliguria. Patients with bilateral ureteral block as a result of stones or surgical trauma are

* Presented at the Eightieth Annual Meeting of the Louisiana State Medical Society, May 3, 1960, in Baton Rouge.

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excluded from consideration here. Since the obstetrical complications listed above are well defined, one may thus recognize the individual most likely to develop renal failure.

During the past eight years, 18 patients developed prolonged oliguria following obstetrical accidents on the L.S.U. Division of Obstetrics. Table 2 depicts the obstetrical complications associated with prolonged acute renal failure in 17 of these patients. The evidence here supports the contention that acute renal failure occurs more frequently when hypertensive toxemia and placental abruption co-exist than when either one or the other of these occurs separately.[1] The maternal prognosis is grave when cardiovascular collapse occurs by itself or concomitantly with the above. Of eight patients manifesting this sign, five are dead.

The development of infection in these patients could be attributed in part to the poor general condition resulting from hemorrhage, shock, trauma and/or stress. When the infection persisted into the diuretic phase, the maternal prognosis was most grave. Four of the six patients presenting this clinical picture are dead.

Five patients developed acute renal failure after incompatible blood transfusions, phenol intoxication, eclampsia, and nontoxic abruption of the placenta. All of these patients are living and well.

Pathogenesis

The causative factors and pathogenesis for the production of transitory renal failure, termed here as functional oliguria, are indistinguishable from those resulting in prolonged oliguria or anuria. Whether or not the patient sustains tubular damage, or extensive cortical necrosis, can be determined by the subsequent clinical course or renal tissue studies. The oliguria is a net result of a decrease in renal blood flow and glomerular filtration in both groups with probable indiscriminate reabsorption of the filtrate in those patients sustaining tubular epithelial disruption.[2]

The pathogenesis of tubular epithelial necrosis or, worse, renal cortical necrosis remains obscure.[3] Many investigators have emphasized the significance of the duration and severity of illness to the subsequent organic renal changes of a temporary or permanent nature.[3-5] In line with this reasoning, abruptio placenta and coexistent toxemia were the most common factors, 6 of 18 patients, in the production of prolonged renal failure in this series.

TABLE 2
OBSTETRICAL CONDITIONS ASSOCIATED WITH PROLONGED OLIGURIA

	Number of Patients		
	Living	Dead	Total
1. Severe preeclampsia and abruptio placenta (1 pt. with cardiovascular collapse & sepsis—dead)	2	1	3
2. Eclampsia and abruptio placenta (1 pt. with cardiovascular collapse & sepsis—dead)	2	1	3
3. Eclampsia (1 pt. with cardiovascular collapse)	2	0	2
4. Abruptio placenta, hypofibrinogenemia and postpartum hemorrhage with cardiovascular collapse	1	0	1
5. Hemorrhage, cardiovascular collapse & sepsis (1 pt. multiple pregnancy, 1 pt. ruptured uterus, 2 pts cesarean section) (3 pts. septic in diuretic phase—dead, 1 pt. septic in diuretic phase—living)	1	3	4
6. Infected abortions (criminal) (2 pts. septic in diuretic phase)	1	1	2
7. Phenol intoxication	1	0	1
8. Incompatible blood transfusion	1	0	1
9. Unknown	1	0	1
TOTAL	12	6	18

Enumeration of the pathophysiological changes attending this combination of obstetrical complications reveals a mechanism for severe renal ischemia and anoxia. The hemoconcentration and generalized vasospasm of toxemic patients are well documented. Hemorrhage and cardiovascular collapse often complicate those patients with abruptio placenta. Coupled with the above are fibrinogen alterations resulting in micro emboli or fibrin deposits in kidney arterioles.[2] These combined and additive factors are responsible for subsequent organic lesions. Two of the six patients with abruptio placenta and toxemia are dead. Both of these patients had bilateral massive renal cortical necrosis.

Clinical Course

The time honored division of the clinical course of reversible renal failure into three phases is retained here. The onset of phase I is usually simultaneous with the near maximum heighth of an obstetrical illness affecting the cardiovascular system or following entrance of nephrotoxic substances into the blood stream. If renal suppression does continue for forty-eight hours following correction of these predisposing factors, it is assumed that the basis for this complication is an anatomic lesion of the kidneys. The clinical course has now entered phase II, the prolonged stage of oliguria. For 15 of 18 patients in this series, the average period of oliguria was ten days with a range of three to nineteen days. The third and final phase, the stage of diuresis is defined in this paper by a significant increase of urine output to 1000 cc. per day.

During the first phase, the clinical and laboratory findings are peculiar to the obstetrical condition preceding the onset of renal suppression.

In the event the patient sustains prolonged oliguria or anuria, certain clinical and laboratory changes occur which are an indication of the severity of the patient's illness. With proper therapy, the patient's sensorium usually remains clear during the first week. Continuation of the oliguric phase leads to irritability, lethargy and subsequently coma. The heart sounds may become muffled, and irregularities in rate and rhythm become apparent. The patient's breathing becomes labored and rapid. Coupled with the above are chemical changes which may be significant or coincidental in the production of these clinical signs of deterioration. The marked decrease in hematocrit is partly explained by hemo-dilution, suppression of the hemopoietic system and the increased hemolysis of red cells in the presence of uremia.[13] All of the known nitrogenous products are increased. The serum sodium tends to decrease concomitantly with a rise in serum potassium. Acid-base balance studies reveal a severe acidosis in most patients. This acidosis is enhanced by metabolic tissue breakdown and protein catabolism as evidenced by a rise of phosphates, sulphates, and other acid metabolites. Hypocalcemia is often present but not to the same extreme as chronic renal insufficiency. Tetany has been rarely observed.[6] The convulsions of tetany, over dehydration, and eclampsia are important since lactic acid is released thus increasing acidosis. The presence of edema is evidence of overhydration.

If the patient survives to phase III, the diuretic phase, the sensorium gradually clears. The cardiac abnormalities disappear. Infections incurred during the anuric phase may persist. The blood urea nitrogen remains elevated and may rise following the onset of diuresis because of preferential water loss by the kidney, the lack of sufficient urea clearance for endogenous urea production, and the incomplete return of tubular integrity.[8] By the third or fourth day of diuresis, the blood nitrogen levels begin to decline toward normal. Early in diuresis the serum sodium and potassium levels fall since the renal tubules are unable to control electrolyte reabsorption. Tests of function such as urea clearance and insulin clearance may not return to normal for months and occasionally never.[7] The reason for the persistent anemia is not completely under-

stood, but reflects the patient's response to uremia.[13]

Therapy

Emphasis is placed upon prevention or immediate recognition and correction of those well defined obstetrical complications usually preceding anatomic lesions of the kidney. The quantity and quality of prenatal care are all important in prevention and in the intelligent management of obstetrical complications such as toxemia, hyperemesis gravidarum and sepsis. Since these conditions are frequently responsible for oliguria, it is essential that an accurate accounting of the fluid intake and output be recorded on these patients.

The early phase of oliguria attending those patients with severe pre-eclampsia-eclampsia is probably secondary to plasma dehydration (hemoconcentration), afferent arteriolar constriction and reversible glomerular lesions. It is essential that these patients are hospitalized and on complete bed rest for effective therapy of these patho-physiological changes. Bed rest in itself often has a beneficial diuretic effect. Sedatives such as morphine sulphate, magnesium sulphate, and more specific vasodilator-relaxant compounds such as veratum and thalazine derivatives are important to prevent progression of the disease process as well as occasionally effecting a return of the clinical picture toward normal. If the oliguria, a grave prognostic sign, persists then delivery of the infant is indicated and usually met with a welcomed diuresis.

Abruptio placenta is not uncommonly associated with toxemia. The former may present additional hazards of coagulation defects secondary to lowered fibrinogen levels with subsequent increased hemorrhagic tendencies. In this event, artificial rupture of the membrane and expeditious delivery by the vaginal or abdominal route is indicated. Blood replacement and other measures to combat hypotension, fibrinogen administration, and anti-hypertensive agents are utilized as indicated.

Prevention of the organic kidney lesion subsequent to incompatible blood transfusion is best done by careful type and matching and Coombs testing. If this unfortunate accident is apparent, then intravenous administration of basic solutions in an attempt to prevent kidney changes are unsuccessful. In fact, great harm may attend this therapy in the patient with increased body stores of sodium and water usually characteristic of near term pregnant patients.

In the event of puerperal vasomotor collapse associated with toxemia, the administration of hypertonic sodium solutions (250 cc. 5% NaCl) are effective.[9-10] In the case of acute adrenal failure usually following sudden bacteremia then combination of the above treatment with specific adrenal replacement therapy and massive doses of antibiotics are indicated. An obvious necessity is immediate recognition of the etiology and institution of proper therapy in these cases in an attempt to correct deranged vital signs and thus circumvent visceral damage.

Oliguria secondary to dehydration from hyperemesis gravidarum and/or sepsis must be recognized and immediately corrected. The value of adequate prenatal care and objective evaluation of the patient by physical examination including weight records and simple office laboratory procedures to detect dehydration and starvation is emphasized. The packed cell volume will indicate hemoconcentration (reduced plasma volume) and a urinalysis will reveal an increased specific gravity and the presence of significant amounts of acetone. The specific gravity may be low in such cases in the presence of marked depletion of body electrolytes or parenchymatous lesions of the kidneys. Hospitalization is recommended for these patients. The choice of fluid for administration is important here. The administration of glucose solution without proper electrolyte components could result in water intoxication by hemodilution and subsequent decrease in blood electrolytes with further deterioration of the clinical picture. Isotonic sodium chloride solutions, combined with glucose are effective and sufficient to accomplish hydration, restoration

of electrolyte balance, and nourishment. Since the usual deficit approximates 5 liters of saline, the administration of 2500 cc. of 10 per cent glucose in normal saline and 1000 cc. of 10 per cent dextrose in distilled water in this order will safely and partly correct previously mentioned deficiencies. Following the administration of these fluids over an eight to twelve hour period, the packed cell volume, urine output, and specific gravity, and possibly, serum electrolytes should be evaluated. This collective evaluation is necessary at this time so that deleterious over-correction is prevented in the presence of anatomical lesions of the kidney as indicated by continued oliguria or anuria.

Other patients may develop decreased urine output secondary to heart failure. The value of appropriate and immediate correction of this serious complication need not be elaborated upon.

Oliguric Phase

Following adequate specific therapy for the acute phase of the aforementioned clinical entities, the persistence of oliguria or anuria indicates the presence of more serious parenchymatous lesions of the kidneys. At this time, it is important to limit the intake of water, electrolytes and proteins. These precautions are necessary since an immediate danger is overhydration and heart failure or water intoxication and convulsions resulting from cerebral edema. Also, protein ingestion with subsequent increased protein catabolism may result in death due to potassium intoxication as well as severe acidosis by liberation of acid metabolites such as phosphates and sulphates.

Since continued carbohydrate intake helps prevent protein catabolism, the administration of approximately 200 grams of glucose per day is essential. This nourishment is preferably administered orally. The parenteral route of administration is essential in the presence of nausea and vomiting. Insulin in the ratio of 1 unit per 4 grams of glucose is recommended so that glycogen storage and metabolism is enhanced.

The fluid intake is limited to 500 cc. plus the previous twenty-four hours output from the genito-urinary or intestinal tracts. The ideal therapy includes daily weight of the patient in an effort to effect a loss of one-fourth to one-half pound per day.[11] This philosophy of management is especially valuable in the obstetrical patient who is usually edematous at the onset of these obstetrical accidents.

The administration of large doses of calcium salt is helpful as a potassium antagonist.[12] Large doses of calcium administered in the presence of digitalis therapy may cause an unwanted increased effect of the latter drug.

A decrease in serum sodium, CO_2 combining power and red cells are expected. With the exception of nasal oxygen, correction of these derangements are not attempted unless the patient exhibits signs of air hunger or potassium intoxication. Since acidosis favors the release of potassium, the administration of sodium lactate, a powerful antagonist to potassium, will temporarily reduce intoxication and prepare the patient for more effective means of elimination of all injurious substances. Cationic resins are helpful but not so reliable as to preclude the elimination of calcium and other ions rather than potassium.

If the hematocrit drops to 20 mm.% or there is evidence of anoxia from anemia, then the administration of packed *fresh* red cells may be beneficial. This level of circulating red cells may result in tissue hypoxia with resultant cardiac dysfunction and a delay in repair of vital organs during the regenerative period. *Caution* is advised in the decision for blood transfusion in the absence of symptomatic anoxia. The danger of an injurious transfusion reaction or shortened life span of infused red cells in the face of uremia [13] and liberation of more potassium may outweigh the desired beneficial effects.

Deterioration of the patient during conservative management necessitates expert attention, more effective and ofttimes complicated methods of therapy. Here

lies the importance of the "artificial kidney". For these reasons, the internists responsible for direction of the "kidney station" in Charity Hospital at New Orleans are consulted regularly for their invaluable contribution toward management and observation of these patients. At present, this service is under the capable direction of Doctors Meyer Kaplan and David J. Mykoff of the Department of Medicine in the L.S.U. School of Medicine. The decision to perform vivo dialysis is based upon careful daily and frequently hourly examinations of the total clinical picture. Particular attention is paid to a cloudy sensorium, hyporeflexia, weakness, muffled heart sounds coupled with arrhythmias, abnormal electrocardiograms, trend of urinary output and blood chemical determinations of potassium, CO_2 and nitrogenous products. Early detection of these signs of acute intoxication is essential for immediate proper therapy in order to prevent irreversible visceral damage.

The clinical and laboratory data on six of seven obstetrical patients in the immediate pre and post dialysis periods is presented (Table 3). The marked improvement in the state of consciousness, reversal of electrocardiographic changes and decrease in blood urea nitrogen and serum potassium levels are indications of the effectiveness of this method of therapy. Two patients, M.S. and M.V., died. Renal tissue studies revealed irreversible massive cortical necrosis. Though this procedure is not without danger, the severity of illness warrants its use in some cases. Also, the severity of illness does not contraindicate the use of the "artificial kidney". In some centers, vivo dialysis is used earlier in the course of therapy. This decision is probably based upon the premise that the patient is better able to withstand the dangers of circulatory overloading, hemorrhage secondary to anticoagulant (heparin) administration, and infection in the form of septicemia following blood contamination.

If the patient develops signs of infection, it is important to obtain cultures and antibiotic sensitivity studies from all orifices and excretory products, namely urine, so that appropriate and effective antibiotic therapy may be employed. As mentioned earlier, the persistence of infection in the diuretic phase when the general condition of the patient is at the lowest ebb, is a serious prognostic sign.

The onset of diuresis is usually followed by a marked improvement in the clinical picture. Recovery of the patient in this phase may be seriously hampered by a marked depletion of body electrolytes secondary to excessive urinary losses. This complication is best managed by adequate replacement based upon daily determinations of the total loss of urinary sodium, potassium and chloride.

Summary and Conclusions

1. Emphasis is placed upon prevention or immediate recognition and correction of the well-defined obstetrical complications preceding acute renal failure.

2. The obstetrical complications in this series of patients most commonly associated with anatomical lesions of the kidneys were toxemia, abruptio placenta, hemorrhages, infection and incompatible blood transfusions. The most frequent of these antecedent complications were toxemia and abruptio placenta, 9 of 18 patients.

3. There were six deaths in this series of eighteen patients. Two of these patients had massive renal cortical necrosis.

4. The most serious complication of prolonged oliguria in this series of patients was the persistence of infection into the diuretic phase. Four of six of these patients died.

5. Seven of eighteen patients received vivo dialysis when conservative measures failed. The beneficial effects of this form of therapy are presented in these patients.

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TABLE 3

COMPARISON CLINICAL & LABORATORY DATA IN IMMEDIATE PREDIALYSIS & POST DIALYSIS PERIODS

	P.C.V.		Serum Electrolytes Na+ mEq/L.		Serum Electrolytes K+ mEq/L.		B.U.N. MG.%		CO_2 mEq/L.		E.K.G.		Sensorium	
	Pr.D.	Po.D.	Pr.D.	Po.D.	Pr.D.	Po.D.	Pr.D.	Po.D.	Pr.D.	Po.D.	Pr.D.	Po.D.	Pr.D.	Po.D.
M.S.	21	26	138.7	148	6.54	3.22	52	46	12.0	N.R.	Norm	Norm	Semi Coma	Lucid
M.V.	17	21	125.0	155	7.0	3.9	125	48	8.5	N.R.	Norm	Norm	Leth.	Delerium
G.M.	27	N.R.	135.1	134	6.8	4.6	N.R.	59	15.7	23.9	Norm	Norm	Leth.	Alert
A.T.	23	25	N.R.	135	7.85	3.3	91	23	N.R.	18	Cond. Defect	Norm	Leth.	Lucid
J.V.	20	25	129.5	133	5.65	3.4	178	101	10.8	23	Cond. Defect	L.V.H.	Leth.	Lucid
F.G.	23	N.R.	144	150	6.0	4.1	245	100	8.9	19	Norm	Norm	Semi Coma	Lucid
D.M.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AVG.	22	24	134	143	6.64	3.8	124	63	11.2	21				

* D.M.—Chart containing clinical and laboratory data on this hospital admission (1951) lost. Patient last seen in Urology clinic on 3/10/58—clinically well.

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Discussion

Dr. Meyer Kaplan (New Orleans): I would like to commend Drs. Mule and Stewart, for covering their topic so clearly. Their opinions on the management of obstetrical cases of acute renal failure parallel closely those of the staff of the artificial kidney unit at Charity Hospital. Such agreement on therapeutic principles has made our task in managing these cases much simpler. It has been possible to salvage some of these cases only because of the dedicated care which these patients received from Dr. Mule and the Obstetrical house staff. I will only attempt to underscore and reemphasize some of the facts which I feel are of great importance.

Dr. Mule has shown that acute renal failure due to acute tubular necrosis, or more rarely due to bilateral cortical necrosis, occurs as a result of certain obstetrical complications and crises. If such complications could be prevented or minimized, the incidence of acute renal failure could be reduced.

(a) Toxemia of pregnancy with its severe hypertension and intense renal vasoconstrictions may result in acute renal shutdown. It is our feeling that more careful and aggressive therapy of preeclampsia-eclampsia by means of salt restriction, diuretics, sedation, and vasodilator therapy may prevent the more severe toxemias, thus reducing the incidence of acute renal failure.

(b) When abruptio placentae is superimposed on a toxemia of pregnancy, the incidence of renal complications increases. The management of this obstetrical catastrophe involves the proper application of various therapeutic measures, such as the timely termination of the pregnancy, adequate diuretic and antihypertensive therapy, the appropriate, and adequate use of carefully crossed matched blood transfusions and if necessary, the use of adequate quantities of intravenous fibrinogen.

(c) Many of our cases of acute tubular necrosis have occurred as a result of renal ischemia due to hemorrhagic shock or as a result of the administration of hastily and incorrectly crossmatched blood to patients with severe obstetrical hemorrhage. I think it is wise to have all complicated pregnancy cases typed prior to delivery so that if blood is required, it will not have to be hastily obtained. It is this haste in emergencies which has often resulted in incompatible transfusions. Even in emergencies one should check back to determine if the blood to be administered is the same type as that known for the patient. Failure to observe this simple precaution has resulted in instances of incompatible blood administration.

(d) The prompt diagnosis and effective antibiotic therapy of all cases of infection will reduce the incidence of bacteremia and shock which could result in renal shutdown.

(e) The prompt reversal of any hypotensive episode, from whatever cause, will also reduce the incidence of renal failure. The prevention or prompt treatment of dehydration and electrolyte depletion, is also important.

In regard to the diagnosis of acute renal shutdown, the great majority of acute renal failures reveal their presence by a marked reduction in the urine output. Of course it may not be possible to decide immediately whether an episode of oliguria will be only transient due to some functional disturbance, or whether it indicates true structural damage to the kidney. Only a period of observation will tell the true story. However, it is vital that the onset of oliguria be detected promptly so that the appropriate treatment may be immediately instituted to reverse the oliguria, if it is due to functional causes, lest these functional changes be converted to structural organic damage to the kidneys. If the oliguria is due to true renal shutdown, it is necessary that its onset be detected early to prevent over-hydration of the patient. I cannot urge you too strongly to always be aware of what is occurring in regard to the urine output in your patients who have had recent surgery, blood transfusions, hemorrhages, or any severe toxemia of pregnancy.

I will not burden you with a repetition of the principles of management of acute renal failure as these have already been outlined by Drs. Stewart and Mule. Actually, I do not believe that most practitioners or obstetricians will want to assume the responsibility for such care. The management of these cases is time-consuming,

and requires such personalized care that it is best performed by specially trained personnel. This type of care is available only in large medical centers by a specially trained team.

It is my opinion that once the diagnosis of persistent oliguria or anuria is made, contact should be established with the nearest medical center which has artificial kidney facilities and arrangements made for the transfer of the patient to that institution. Here the patient will be managed expectantly with fluid and salt restriction, methods to combat potassium intoxication and therapy designed to retard as much as possible, the progression of the uremic process. In many cases such treatment will be rewarding and the patient will begin to diurese and will recover. However, other cases will continue to be oliguric and their condition will continue to deteriorate, at times with surprising rapidity. Such cases will require the use of artificial renal hemodialysis as a life saving procedure. It is far better to prematurely or even unnecessarily transfer a case of renal shutdown to an artificial kidney center than it is to have one of these cases suddenly deteriorate and expire before such a transfer can be effected.

The Drug Store of the Future

Let us look ahead ten or twelve years and see ourselves as druggists under the unchecked working of the trade-marks system. One of us, who has been out of the business during these ten or twelve years, calls upon his old friend the druggist of that time and asks for the best physician in the neighborhood. The druggist answers: "Oh, there is no difference in any of them; they are all alike. You see things are different now from what they were when you were in the business—excuse me, when you were a member of the profession. You see the physicians have gradually worked into a plan of asking the patient what is the matter with him, and then by referring to a little pocket remedy book, well indexed, he finds the article that suits his case and prescribes it. * * * You see the manufacturers have meetings every three months and add to and correct these lists. I have one of these books * * *. The title is "The Consolidated Trade-Mark Manufacturers' Manual, for Physicians Only." If a man says he is bilious, the physician turns over to B and follows down through Ba, Be, to Bi—there you have it: "Biliousness, for all cases of biliousness use Hyfalutine, Pseudocetine, etc. etc."

The Pharmacist, May 1882, Ther. Gaz. June.

New Orleans M. & S. J. 10:300, (October) 1882.

Some Newer Electronic Developments In Diagnostic Radiology

1961 Menville Memorial Lecture*

• In his address, the annual commemoration of Dr. Leon Menville, the author gives a most interesting presentation of the growth of diagnostic radiology, made possible by the advances in electronics.

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TODAY controversy is widespread and vigorous over the modern schism between science and the arts. It is reflected in the present concern of medical educators about the lack of background in the humanities exhibited by medical graduates. In honoring Doctor Leon Menville we are directing attention to many of the personal attributes that, embodied in one individual, call to mind the well rounded "renaissance man" which might be regarded as the ideal of the present educational effort. For Doctor Menville combined great warmth of personality, charm, humor and compassion with professional competence, scholastic and scientific achievement, love of teaching and civic pride and responsibility. My knowledge of Doctor Menville is unfortunately limited to the published tributes and to testimonials of those who were his friends and colleagues—but these accounts are literally aglow with the color of this man's personality.

Dr. Leon Menville

For those who, like myself, did not have the opportunity to know Doctor Menville personally, an epitome of his career is in order. He had the advantage of a medical tradition by birth; a third generation physician, the son of a country doctor, he was born in Napoleonville, Louisiana, in 1882. His son, Doctor John Menville, carries on the family tradition in New Orleans. After graduating from Louisiana State University and Maryland Medical College he engaged in private practice with his father in Houma. The purchase of an x-ray machine in 1905, (the new rays had been announced by Roentgen just nine years before) introduced Doctor Menville to the infant art of radiology. With this stimulus, radiology became his major interest and he obtained special training in the new field at the Mayo Clinic. Thereafter, his progress was rapid to a commanding position, locally and nationally, as an outstanding radiologist. A member of the Tulane University faculty from 1919, he served as its Professor of Radiology from 1934 until his retirement in 1948. For ten years he was Director of the Department of Radiology at the Charity Hospital and for many years he was radiologist or consultant at numerous other New Orleans hospitals.

Doctor Menville took an active part in the affairs of the Radiological Society of North America and served as editor of its journal, "Radiology", from 1931 to 1941, when he became President-elect of the Society. His beneficial influence in medical education was effective not only through his interest in undergraduate teaching but also as an early member of the American Board of Radiology. On the more local scene he was an active member of the State Board of Medical Examiners.

It is appropriate to note that one of Doctor Menville's chief investigative in-

* Presented at the Eighty-first Annual Meeting of the Louisiana State Medical Society, May 9, 1961, in New Orleans.

terests, the contrast visualization of the lymphatics, is again being pursued by his former associate, Doctor Joseph Ané, as a research project with his colleagues in the Department of Radiology at Tulane University School of Medicine. For this early original work Doctor Menville received the Gold Medal of the Louisiana Academy of Science in 1934.

This recital of achievements is incomplete without re-emphasis of the remarkable personality which gave him such wide popularity as a speaker and friend in this country and abroad, especially in Latin America.

Doctor Menville was a vigorous expounder of the contributions of radiology to medicine and to humanity. His professional career spanned the period of technical development I am to talk of today—from Roentgen's discovery to television. While the special contribution of diagnostic radiology to medicine is purely technical it is to be hoped that through the example of great physicians like Doctor Menville these technical developments may be used to draw us ultimately closer to our patients as well as to the solution of their problems.

The technical developments that I am going to discuss, together with some of their applications, have been the most important and interesting in diagnostic radiology in the last decade and from their foundation I believe modifications will come that are going to continue to revolutionize the practice of diagnostic radiology in addition to making major contributions in medical teaching and research.

Fluoroscopy

The fluorescence of barium platinocyanide was observed by Roentgen and, in fact, was directly involved in his discovery of the x-rays in 1895. For many years this chemical continued to be employed in fluoroscopy for diagnosis. Subsequently, Michael Pupin, a Professor at Columbia University, employed calcium tungstate for the fluorescent screen, as suggested by Thomas Edison, in one of the first intensification systems enhancing the effect of x-rays on photographic film through the light produced by the fluorescent effect. It is of historical interest that a British engineer very closely associated with the early technical development of radiology in England had made the same suggestion at about the same time; this man, Campbell Swinton, was also intimately connected with early developments in television in Great Britain, and as early as 1908 suggested the elements of cathode ray scanning, which has since become commonplace in all television systems. Campbell Swinton, in fact, described this system in his presidential address before the British Roentgen Society in 1911; the title of this address was, "Electric Vision at a Distance". Subsequently a French radiologic physicist, Dauvillier, was also simultaneously interested in television and in radiologic problems. His early interest is indicated by a television patent in 1915, and in the presentation at the Third International Congress of Radiology in Paris in 1931 of an apparatus in operation for transforming an x-ray image into an optical one by electronic means.

Meanwhile, practical developments had been occurring at a slower pace in fluoroscopy. Thus, the introduction of the zinc-cadmium sulphide yellow-green fluorescent screen by Levy and West in England about 1935 was regarded as a dramatic improvement in fluoroscopy; this screen increased the brightness two-fold and its color is more efficient physiologically.

Application of the early suggestions of men like Campbell Swinton and Dauvillier awaited improvements in optical systems and the availability of intensifying image tubes. Publications by European workers and by Chamberlain and Henry in the United States brought together physical and physiological information which guided and stimulated x-ray and electronic manufacturers in their next big step in brightening the fluoroscopic image. Russell Morgan at Johns Hopkins had much to do with the present day knowledge of application of television techniques in radiology. In this, as in many other fields of medicine, we are only beginning to reap

the benefits of the tremendous, almost explosive, growth of the science and art of electronics of the last two decades.

The present electronic image intensifier tube makes possible visualization of the fluoroscopic x-ray image of patients in lighted rooms, without the necessity of dark adaptation on the part of the observer and at reasonable x-ray dosages. With the addition of television display to the system, great flexibility in the mechanical arrangements becomes possible. The observer is no longer hampered by clumsy viewing systems attached to the already cumbersome fluoroscopic machine with its increasing load of electronic gear. Many observers can view the fluoroscopy in progress at as many sites as is desirable for consultation and teaching. Recording of the progress of the fluoroscopy can be made directly on movie film or now even on video tape as in commercial television programming, albeit an expensive procedure at present.

In our institution we have had experience with a number of different types of commercially available image intensifier tubes and have used them both in clinical practice and in laboratory research. The brightening of the fluoroscopic image with its attendant increases in information came at a time when the art of fluoroscopy was in danger of total eclipse as a result of the emphasis on the attendant radiation hazards. The greatly increased information available from modern image intensifier fluoroscopy together with the somewhat decreased radiation dose required is causing a revival of interest in fluoroscopy particularly for many of the specialized procedures for selective angiography. We have employed, as is now common practice, television presentation of fluoroscopy during heart catheterization so that the procedure can be carried out in a lighted room and with the operating team and students and visitors able to observe the progress of the procedure by x-ray. We have also had some experience with the use of storage television systems whereby single exposures can be displayed for several minutes at a time on the television screen. For procedures where "live" fluoroscopy is not continuously necessary this can result in presenting useful information at a great saving in radiation exposure. We have also presented the x-ray information connected with the endoscopic removal of a foreign body from a laboratory animal with the simultaneous television presentation of the endoscopic view of the foreign body through the medium of the optical system of a photo-bronchoscope.

In 1950, Doctor W. Edward Chamberlain, Emeritus Professor of Radiology at Temple University School of Medicine, combined his long-standing intense interest in stereoscopy and in fluoroscopy in an experimental stereo-fluoroscopy arrangement employing one of the first two image intensifier tubes produced commercially by the Westinghouse Company. We are at present engaged in a project to determine the feasibility of such an arrangement employing presentation of the stereoscopic images on two television monitors which are then viewed with appropriate polaroid glasses. Preliminary results with the apparatus have been encouraging. The apparatus has been tested during heart catheterization in dogs and it appears that when perfected it should facilitate this procedure as well as the removal of opaque foreign bodies endoscopically and otherwise. It remains to be seen whether such an apparatus can contribute materially to the diagnostic value of fluoroscopy in general.

Cineradiographic Techniques

The other major area of progress attributable to electronic advances to which I wish to call attention is the new possibility for detailed physiological studies made possible by the new x-ray movie technique correlated with recordings of the standard accepted physiological parameters. X-ray movies of patients before 1950 required such large x-ray doses that they were impractical. With the image intensifier it is now possible to study patients with reasonable x-ray doses employing cineradiographic techniques

when there is a proper medical indication for such study. Most of the apparatus commercially available today still requires sizable x-ray doses particularly if the study of thicker portions of the body such as the abdomen are in question.

In our hospital practice we have employed the x-ray movie technique particularly in connection with the examination of the gastrointestinal tract and of the heart. The motions of the act of swallowing and of the heart occur so rapidly that there is really no other satisfactory way of completely studying the physiologic activity in progress. Various pressure and sound recordings can be made simultaneously on the film for correlation with the mechanical events in the structures being studied as displayed by the x-ray movie images. Such a correlation is exemplified by one of our laboratory studies which dealt with the regularly observed phenomenon of regurgitant flow of opaque contrast material slowly injected into the left ventricle of dogs through a catheter passing down through the carotid artery and the aorta into the left ventricle. We found that whenever the heart rate slowed sufficiently the diastasis lengthened to permit the backward flow of the opaque contrast material. This normal phenomenon occurring with arrhythmias must be reckoned with in the interpretation of left ventricular angiography with respect to the diagnosis of significant mitral regurgitation. In addition to motion films at 60 frames per second of this normal regurgitant phenomenon the time of occurrence of the regurgitation as visualized in the x-ray movie film was transferred to the standard multi-channel recording paper by means of an x-ray sensitive photoelectric pick-up (electrokymograph) placed in the x-ray beam over the left atrium.

One of the first cineradiographic experimental studies carried out in our laboratory was concerned with the demonstration of the rapid solution of carbon dioxide injected intravenously for the gas contrast visualization of the interior of the heart in experimental animals, a study carried out with Doctors Thomas Durant and Morton Oppenheimer. Subsequently, this technique has found considerable practical clinical application in the demonstration of pericardial effusions, the injection of gas intravenously being made with the patient lying on the left side so that the gas collects in such a way as to outline the lateral border of the right atrium.

A further experimental study which indicates the possible scope of these techniques involves x-ray movie filming at considerably higher speed, at present at about 270 frames per second. Here we use a standard industrial high speed camera that has an optical system at right angles to that used for recording the x-ray image so that an oscilloscope displaying pressure pulses, heart sounds, E.C.G. or etc., can be photographed simultaneously with the image intensifier x-ray image on the 16 mm. movie film. Using this equipment our radiology-physiology research group has studied the distinct differences in the pattern of blood flow between the superior and inferior vena cava in dogs and cats employing droplets of opaque oil as the contrast markers in the blood stream. At present, studies are under way to investigate the differences in the pattern of acceleration of the blood in the dog's aorta before and after varying degrees of myocardial damage. The ability of the heart to accelerate the blood mass against the peripheral resistance is of course a most sensitive index of myocardial function. In an attempt to keep pace with the "computer age" we are making use of a small computer element which enables us to plot automatically curves of either velocity or acceleration directly from our curves of displacement versus time obtained from the movie films of these rapidly moving droplets in the blood stream.

Studies such as those mentioned, we believe, provide new avenues for obtaining basic information of scientific interest, serve to train us in physiological techniques and concepts and provide the basis

for developing new diagnostic radiologic techniques.

Clinical radiology is a science and art fundamentally based on electronic technology. It is my hope that this brief review has provided not only a glance at the history and present status of the new developments but also, perhaps, a stimulating vision of some of the possibilities of future medical illumination that may be possible through application of Roentgen's rays.

The Influence of Inundation on Health

Stanford E. Chaille, M. D.

1849—In this year occurred the most disastrous overflow which ever afflicted New Orleans, and in the same year an excessive mortality. This was due chiefly to a severe epidemic of cholera, which began and was severest in December 1848. * * *

1856—The September New Orleans Medical and Surgical Journal, reported as follows; "The sea swept over the outlying islands and the depressed littoral of Louisiana, drowning hundreds of its inhabitants and elevating the waters of Lake Pontchartrain, whereby a large district of New Orleans was inundated. * * *

The mortality statistics in the table fail to indicate any unfavorable influence of the flood on health.

* * *

1871—During the spring months, the waters of the Mississippi River, flowing through the crevasse at Bonnet Carre (about 20 miles above New Orleans) found their way into Lake Pontchartrain. * * * The second District has been remarkably healthy during the entire year, notwithstanding the overflow from Lake Pontchartrain which inundated that part of the city lying between the old Carondelet Canal and the New Canal, as high up as Basin Street.

New Orleans M. & S. J. 10:29, (July) 1882.

Surgical Correction of Strabismus

• The author covers thoroughly the causes, the signs and symptoms and the treatment of the groups of this condition.

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STRABISMUS is a condition or conditions in which the visual axes assume a position relative to each other different from that required by the physiological conditions.

It may be divided into two great groups: (1) those due to known cause and (2) those due to unknown cause. To the first group belong (a) those due to paresis or paralysis of one or more of the extrinsic muscles, i.e., paralytic and (b) those due to irregular activity or over-activity of individual muscles or groups of muscles and a subgroup which may be designated as kinetic. To the second group belong (a) those cases which are characterized by the fact that the visual axes, though abnormally directed, retain their relative position in all movements of the eyes; they are therefore termed concomitant. Another subgroup of the second class is (b) cases in which there is latent crossing or heterophoria.

Paralytic Type

Signs and symptoms. (1) Limitation of movement. In paralysis of an ocular muscle the ability to turn the eye in the direction of the normal action of the muscle is lost or diminished. This may be tested for, roughly by holding the patient's head and telling him to follow the movements of the physician's finger.

If the sound eye is covered by a screen, and an attempt is made to fix an object so situated that the paralyzed muscle is brought into play, it will be found that the eye behind the screen deviates more than the primary deviation of the paralyzed eye.

(2) Diplopia. The chief complaint of patients with paralysis of an extrinsic muscle is often that they see double. Diplopia occurs only over that part of the field of fixation towards which the affected muscle or muscles move the eye.

(3) False Orientation. It will be seen from what has already been said that false orientation is a necessary accompaniment of binocular diplopia. Suppose that a patient whose right external rectus is paralyzed shuts his left eye and attempts to fix an object situated towards the right. Let him now quickly strike at the object with his extended index finger. The finger will pass considerably to the right of the object. This is called false projection.

(4) Position of the head.

The patient holds his head so that his face is turned in the direction of action of the paralyzed muscle.

(5) Vertigo.

Vertigo, leading to nausea and vomiting may occur.

Etiology.

Paralysis of ocular muscles may be caused from a lesion situated in any part of the nerve tracts from the cerebral cortex to the muscles. The site may therefore be intracranial or intraorbital.

Ocular paralysis of intracranial origin may be due to affections of the blood vessels i.e., hemorrhage, thrombosis, etc. or to external pressure such as tumors, blood-clots, periostitis, etc.

Other causes are diphtheria, diabetes and other toxic conditions, and injuries.

Paralysis of the external recti is common in cases of intracranial tumors. It may be due to pressure by the anterior inferior cerebellar and internal auditory arteries, which cross its nerve at right

* Presented at the Eighty-first Annual Meeting of the Louisiana State Medical Society, in New Orleans, May 9, 1961.

angles and often lie ventral to it. The nerves are strangulated between the vessels and the edematous and swollen pons. This may also account for the spinal anesthetic cases, and ophthalmoplegic migraine, the third nerve passing between the superior cerebellar and the posterior cerebral arteries.

Injury to and disease of the orbit may affect the nerves of muscles in this situation by rupture, pressure, and inflammation.

The prognosis varies with the cause.

Treatment.

Treat the cause which is found. Diplopia may sometimes be relieved by prisms. Exercising the weak muscle may help at times. Operation is seldom of much worth.

If diplopia is very troublesome and cannot be relieved, the affected eye should be covered or occluded.

Nystagmus

Nystagmus is the term applied to rapid oscillatory movements of the eyes, independent of the normal movements, which are not affected. The oscillations are involuntary. They are usually lateral, but vertical and rotary can occur.

Nystagmus may be congenital or early infantile, or it may be acquired. Those two groups of cases should be carefully distinguished on account of their different pathological foundation. Nystagmus dating from birth or within a few weeks from birth, occurs in congenitally malformed eyes, in albinism, and in eyes with leukoma or in eyes with partial cataracts and in those with macular changes. The cause in these cases is inability to develop normal fixation. Fixation is developed during the first few weeks of life, the eyes being moved aimlessly and independently before it is acquired. Nystagmus is present in total color blindness.

Nystagmus in adults occurs in disseminated sclerosis, disease of the cerebellum and vascular tracts, and of the semicircular canals (i.e., occasionally on syringing the ears.) Friedreick's ataxia, etc. In disseminated sclerosis the movements are generally horizontal and are elicited in the early stages only in extreme lateral positions of the eyes. Cerebellar irritative lesions cause coarse nystagmus towards the side of the lesion and fine nystagmus to the opposite side. Nystagmus may also occur in adults as an "occupation neurosis" the commonest form being coalminer's nystagmus.

In congenital and early infantile nystagmus the patient is wholly unconscious of the movements, since objects do not appear to move. Vision is usually defective in spite of correction of errors of refraction which generally accompany the disease. In some cases of acquired nystagmus in adults, objects appear to move.

The prognosis is good in miner's nystagmus, if the occupation is changed, though recovery is slow. In all other cases it is bad, though it tends to diminish with advancing years. Treatment is therefore palliative, consisting of refraction, wearing smoked glasses in albinism and treating any disease which may be present. Labyrinthine nystagmus occurs in disease of the internal ear, in normal persons by rotation in a specially designed chair or by passing a galvanic current through the head.

Miner's nystagmus occurs chiefly in those who have worked long at the coal face. The patient complains of defective vision, which is worse at night, headache, giddiness, photophobia, dancing of lights and movements of objects.

The essential cause of miner's nystagmus is that there is always poor light and since the area from 10 to 15 degrees around the macula, is used for vision at low illumination, the patient gradually loses his power of fixation and nystagmus occurs. Contributing causes are: ill health, poor illumination and errors of refraction.

The treatment consists in better illumination, treatment of the ill health factor and correction of errors of refraction. If this all fails, the patient should be withdrawn from this type of work.

Concomitant Strabismus

In concomitant strabismus the visual axes, though abnormally directed, retain

their abnormal relation to each other in all movements of the eyes. It differs therefore in this respect from paralytic strabismus, in which the relationship of the visual axes to each other changes with every movement of the eyes in the direction of action of the paralyzed muscles when more than one is affected. The deviation of the visual axes may be convergent or divergent, the former being the more common. In concomitant strabismus one eye maintains fixation while the other is adverted or abverted.

If the fixing eye is tested behind a screen, the deviating eye usually moves outwards or inwards through an angle equivalent to the angle of deviation in order to take up fixation.

At the same time the eye behind the screen moves inwards or outwards through exactly the same angle (secondary deviation). If now the screen is removed it will generally be found that fixaton immediately reverts to the first eye. Such a case is usually termed one of unilateral strabismus. In some cases fixation is still retained by the second eye. If it is so retained for a considerable period, i.e., while the patient blinks several times, the squint is said to be alternating. Inquiry will then generally elicit the fact that the patient sometimes squints with one eye and sometimes with the other.

There is no diplopia in a concomitant squint. The vision in the deviated eye is depressed, while in an alternating squint it is not.

Concomitant strabismus always commences in childhood. It may be manifested after a fright, whooping cough, measles or any other debilitating illness.

The prevailing theory at the present time is that strabismus is due to the defect of the fusion faculty.

In every case of concomitant strabismus the angle of the deviation must be measured, so that the effects of treatment may be accurately observed.

The best way to measure the angle of deviation is by prisms.

Treatment.—The routine treatment of concomitant strabismus in a child is as follows:

1. Record the distant vision of each eye.

2. Test the eyes for the error of refraction, using atropine 1 per cent, either solution or ointment.

3. If the patient is found to have a +1.00 diopter or more of hypermetropia glasses are needed. If glasses correct the deviation no operation is needed.

The patient should start wearing them from the age of two years.

4. If the vision is depressed in the squinting eye, it should be restored as much as possible.

5. The best way to restore the vision is to wear a patch over the eye with the normal vision. The patch should be worn during the hours when the patient is awake. Take it off at night.

Have the patient return in one week and test the vision of each eye. If the vision of the eye under the patch has not been depressed, then have the patient return in two weeks. If the vision in the eye under the patch is not depressed then have him return in one month. Never let a patient wear a patch longer than one month at a time without testing the vision in the eye.

It will usually be found that the vision will improve in the eye with depressed vision. When it returns to normal leave the patch off. Then have the patient return in one month and test the vision of each eye. The eye with depressed vision originally, will usually begin to lose vision again. Then reapply the patch as stated above and use the same schedule of wearing it.

The patient when he has attained the age of eight years usually maintains normal vision from then on.

If after three months of wearing the patch and the vision has not been restored, then it should be abandoned.

6. Orthoptic treatment may be used to try to restore fusion, but it has been my experience that it is of no value.

7. If the patient has a deviation of squint that is thirty prism diopters or greater, it has been my experience that an operation is indicated.

8. The type operation which should be used, is the one with which the surgeon gets the best results.

9. Never let a patient with a squinting eye leave your office without treatment, because the eye will not straighten itself and the eye with depressed vision will not restore its vision.

10. If the eye with the depressed vision is not restored by the age of six to six and one half years, it will never be restored.

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A New Disease

A California physician who discovered a new disease—love madness—has been experimenting with the person afflicted therewith and has produced the "love parasite," or bicillus micrococcus. This he cultivated up to the twentieth generation, and with the parasites of that generation he inoculated a number of subjects. The inoculation was invariably successful, symptoms of the disease appearing a very short time after the operation. A bachelor, aged fifty, on the first day after the inoculation, had his whiskers dyed, ordered a new suit of clothes and a set of false teeth, bought a top buggy, a bottle of hair restorer, a diamond ring and a guitar, and began reading Byron's poems.

New Orleans M. & S. J. 10:309, (October) 1882.

Application of The Patch Test In Tuberculosis Case Finding

• An interesting report on surveys made in tuberculosis case finding. A 10 per cent error by patch test application is admitted, but for several reasons this method is believed to be best in mass surveys.

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APPROXIMATELY two years ago, those of us who are administering the Tuberculosis Control Program of the Louisiana State Board of Health were faced with making a decision concerning the future use of the mobile x-ray units in tuberculosis case finding among the general population. For quite some time we had been concerned with the mounting costs of such a program in comparison to the declining returns of newly discovered cases of tuberculosis. Further, more and more was being said and written about the possible radiological hazards resulting from indiscriminate use of the x-ray among the general population. Before arriving at a decision concerning the future use of the mobile x-ray units, a mass tuberculin patch test study was planned in one of the southwestern Louisiana parishes to determine if it were practical to use the tuberculin test for screening purposes and the chest x-ray solely as a diagnostic tool in a community tuberculosis case finding program. The area selected for this study was Iberia Parish.

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Presented at the Eightieth Annual Meeting of the Louisiana State Medical Society, in Baton Rouge, May 3, 1960.

Chest X-ray Survey

The preceding year, one of the mobile chest x-ray units spent several weeks at various locations throughout Iberia Parish. Small (70 mm.) chest films were taken on any individual 15 years of age or over who presented himself to the mobile unit and requested this service. Six thousand three hundred sixty-eight (6368) small x-ray films were taken during this period.

Interpretation of these films resulted in 188 being reported as suspicious for tuberculosis. However, additional investigation indicated that many of these so-called suspicious cases were old tuberculosis patients or suspects already known to the local health unit. Apparently, many of these individuals have a chest x-ray made whenever given the opportunity, in the hope that eventually someone will tell them that they really do not have tuberculosis and that it was all a mistake. Negative results from 14″ by 17″ follow-up films eliminated another group of the original suspects. In the final analysis, of these 6300-plus films that were taken in Iberia Parish during the 1957 survey, the ultimate result was the detection of only one (1) hitherto unknown case of tuberculosis.

Patch Test Survey

Early in 1958, plans were being laid for the patch test survey in Iberia Parish. Much more time and effort must, of neces-

sity, go into planning a patch testing program than is necessary in planning a chest x-ray survey. This patch test program was sponsored by the Louisiana State Board of Health's Section of Tuberculosis Control, the Iberia Parish Health Unit, the Iberia Parish Medical Society and the Iberia Parish Tuberculosis Association. Moreover, several hundred community volunteers assisted in planning and carrying out the program.

One of the reasons for so much advance planning being necessary was due to the fact that management in industries and business establishments had to be sold on the idea of using the patch test as an initial screening device for their employees, instead of the small chest x-ray film to which they were accustomed. One minor disadvantage of using the patch test in industries and business establishments, is that employees must be absent from work on two occasions on separate days—the first time when the patch is applied and again when it is read. However, this presented no great difficulty in Iberia Parish, since the industries and business establishments cooperated practically 100 per cent.

During the course of twelve weeks, a total of 9564 patch tests were applied. This is a 50 per cent increase over the number of people who were x-rayed by the mobile x-ray unit when it visited Iberia Parish the year before. Approximately one-third of this total were children under 15 years of age who ordinarily would not be x-rayed by the mobile x-ray unit.

When dealing with large numbers of people such as this, there will be a certain relatively large percentage of individuals who do not complete the test. Of the 9564 patch tests applied in this study, 1287 (13.5 per cent) were not completed for various reasons (Table 1). Failure to return for the reading was by far the most frequent reason for incompletion.

TABLE 1
NUMBER OF PATCH TESTS COMPLETED COMPARED TO NUMBER OF TESTS INCOMPLETED

	Number	% of Total
Patch tests completed and read	8277	86.5
Absent or did not return for reading	818	8.6
Patch fell off	286	3.0
Wet patch	9	0.1
Incomplete—reason not recorded	174	1.8
	9564	100.0

The overall positivity rate for the 8277 completed tests was 12.9 per cent. Table 2 shows the positivity rates for various age groups. A startling and perplexing observation that is immediately apparent is that 5.4 per cent of the children five years of age and under showed a positive reaction; whereas in the age group 6 to 12 it was only 2.0 per cent and from 13 to 19 it was only 3.8 per cent. A possible explanation for this difference is that this age group represents the preschool chil-

TABLE 2
RESULTS OF PATCH TESTS BY AGE GROUPS

Age Group	No. of Tests	% of Total	Neg.	Pos.	% Positive
5 yrs. & under	927	11.2	877	50	5.4
6-12	1747	21.1	1713	34	2.0
13-19	1194	14.4	1149	45	3.8
20-29	964	11.7	856	108	11.2
30-39	1234	14.9	951	283	22.9
40-49	1068	12.9	802	266	24.9
50-59	615	7.4	441	174	28.3
60-69	241	2.9	181	60	24.9
70-79	71	0.9	59	12	16.9
80 and over	9	0.1	8	1	11.1
Age not stated	207	2.5	169	38	18.3
TOTALS	8277	100.0	7206	1071	**12.9**

dren on whom the tests were done mostly in health unit clinics and children of those families about whom the public health nurses and other volunteer workers were particularly concerned and possibly suspected the presence of tuberculosis in the families, therefore making sure that these children were tested. Consequently, included in this age group there is perhaps a much larger percentage of individuals in the lower socio-economic groups than in the 6 to 12 and the 13 to 19 year age groups, because in these latter two categories the patches were applied to a cross section of children in the schools.

It will also be noted that the highest degree of positivity is seen in the 50 to 59 year age group, where 28.3 per cent showed positive reactions. Thereafter the percentage of positivity tends to decrease with age. Although the number of tests applied in the older age groups was small, there is a definite trend towards a decline in positivity. This may indicate that individuals who have been infected with the tubercle bacillus tend to die at an earlier age than those who have never been so infected.

Table 3 shows the per cent of positivity according to certain selected occupational and professional categories.

TABLE 3
PERCENTAGE OF POSITIVITY ACCORDING TO OCCUPATION
(Patch Tests)

	No. of Tests	No. Positive	% Positive
Bus Driver	67	15	22.4
Cafeteria Worker	140	30	21.4
Clerical	397	83	20.9
Domestic	35	6	17.1
Housewife	976	171	17.5
Janitor or Porter	59	18	30.5
Laborer	977	288	29.5
Maintenance Worker	223	43	19.3
Management	133	37	27.8
Professional	63	16	25.4
Teachers	369	52	14.1
Retired	28	6	21.4
Salt Mine Worker	579	193	33.3

Salt Mine Workers

Salt mining is an industry peculiar to this area of the state. Iberia Parish has at least four large salt mines in the southern part of the parish. Because of the high rate of positivity among these salt mine workers (33.3 per cent), it was decided to follow up immediately with the intradermal tuberculin test, using the intermediate strength PPD. The comparative results are shown in Table 4.

TABLE 4
COMPARISON OF PATCH AND INTRADERMAL TESTS IN SALT MINE WORKERS

Mine	Number of Workers Tested	Positive Reactions Patch No.	Patch %	Intradermal No.	Intradermal %
A	110	43	39.1	51	46.3
B	111	35	31.5	52	47.3
C	126	29	23.0	41	32.5
D	232	86	37.1	116	50.0
TOTAL	579	193	33.3	260	44.9

It is to be noted that in each instance the intradermal test gave a somewhat greater percentage of positivity. The intradermal tests resulted in an over-all positive reaction rate of 44.9 per cent compared to 33.3 per cent positive reactors to the patch tests. However, the follow-up among all of those salt mine workers who showed a positive reaction to either or both tests resulted in not one single case of active tuberculosis being discovered.

These salt mine workers and their families live in the southern part of Iberia Parish where the salt mines are located and have relatively little intercourse with the outside world. Most of these people continue to live in that area and work in the mines, as their ancestors did before them. It is a very stable population with very little labor turnover. It was learned that two or three known cases of active tuberculosis had occurred among these people in the past, but they have long since either died or moved away from the area. Apparently these cases infected a large percentage of this closed population, but luckily there seem to be no active cases at the present time.

Comparison of Patch and Intradermal Tests

Because of the discrepancies in results between the patch and the intradermal tests that were done among the salt mine

workers, one of us (W.W.C.) undertook a comparative study by doing concurrent patch and intradermal tests on known tuberculosis patients in a state tuberculosis hospital. Patch and intradermal tests were done on 124 patients (63 white and 61 colored) who were proven to have tuberculosis, either by culture or by biopsy at surgery.

The results are shown in Table 5. The

TABLE 5
COMPARISON OF PATCH AND INTRADERMAL TESTS IN PATIENTS KNOWN TO HAVE TUBERCULOSIS

Number of Positive	First Strength PPD	Intermed. Strength PPD	Vollmer Patch Positive	Vollmer Patch Negative
95	+		83	12
14		+	12	2
6	+	+	5	1
6	—	+	5	1
2	—	—		2
1		—		1
124				

first three horizontal lines of Table 5 account for 115 patients who were positive to either the first strength PPD, the intermediate strength PPD, or to both. Of these 115 patients, 100 gave a positive reaction to the Vollmer and 15 gave negative reactions. Six (6) patients were negative to the first strength PPD but showed a positive reaction to the intermediate strength. Five (5) of these patients gave a positive reaction to the Vollmer and one a negative reaction. A total of 3 patients known to have tuberculosis gave negative reactions to the first and intermediate strengths of PPD, or to the intermediate strength alone, and all 3 of these patients likewise gave negative reactions to the Vollmer. Of these 3 patients, 1 was old and debilitated and 2 were moribund.

Undoubtedly, the intradermal tuberculin test is more sensitive than the Vollmer patch test and should always be used in diagnostic work. However, we feel that the patch test, when used as a tool in a mass survey for tuberculosis case finding, is entirely satisfactory for the following reasons:

(1) Because of its ease of application, many more people can be reached with the patch test.

(2) It requires no technical skill for its application.

(3) Enough material to do patch tests on many hundreds of people can easily be carried into the field in a small package, in comparison to the amount of equipment (i.e., sterile syringes and needles, etc.) that would be needed to do a similar number of tests when the intradermal is used.

(4) The "fear of the needle" keeps many people from having an intradermal test done, whereas they would very readily consent to a patch test. For the foregoing reasons we believe that, even though there may be a certain degree of inaccuracy in the patch test, it is more than offset by its wider applicability to greater numbers of people in a general survey and therefore results in the finding of more tuberculosis. To emphasize this, the results of the patch test survey that was done in Iberia Parish are summarized herewith.

Results of Follow-up

Of the 1071 patches that were interpreted as being positive, subsequent follow-up by x-rays and clinical studies resulted in the finding of 4 previously unknown cases of tuberculosis in adults (1 in a patient out of the state), plus 1 case of active pulmonary tuberculosis of the reinfection type in a child under five years of age. Furthermore, 16 cases of primary tuberculosis in children were discovered and these children were put on prophylactic antimicrobial drugs. Nine (9) individuals were placed under observation who had old, but apparently inactive, cases of tuberculosis. Seven (7) cases of other pathology were reported from the follow-up x-rays. Of this latter group 2 patients were placed under private medical care for diseases the presence of which had been previously undetected. It should be repeated here that when the mobile x-ray unit visited Iberia Parish the year preceding this patch test survey, more than 6300 small films were taken, which lead to finding only one (1) previously unknown case of active tuberculosis.

There is a brief but interesting story concerning the one (1) case of active tu-

berculosis that was discovered in a patient outside of the state. A very young child gave a positive reaction to the Vollmer patch, whereas the older siblings and parents were all negative. This puzzled the public health nurses so they pursued the problem from an epidemiological approach. Further questioning of the family brought out the fact that the maternal grandmother, who resides in another state, had visited this family following the birth of the youngest child and took care of the baby while Mother was regaining her strength.

A letter was dispatched to the health department of the other state telling of our suspicions, and in due course we received a return letter of thanks saying that Grandmother was investigated, that she was an active case of tuberculosis and, furthermore, that she had not been known previously to the health department of the other state. This case would not have been found by an x-ray survey.

Conclusions

After analyzing the foregoing studies, the following conclusions were made:

1. The tuberculin patch test is less sensitive than the intradermal tuberculin test.

2. The ease of application of the patch test allows many more people to be tested and this more than offsets its lesser degree of sensitivity.

3. Tuberculin testing was more productive as far as finding new cases of tuberculosis was concerned than the mass chest x-ray survey.

4. Tuberculin testing offers a better medium for health education through personal contact than does the mobile x-ray unit.

5. Individuals become more concerned over a positive tuberculin reaction than on receiving an x-ray report of suspected tuberculosis, and therefore are more eager to cooperate in the proper follow-up.

6. Studies now in progress evaluating a tuberculin test which combines the sensitivity of the intradermal test with the ease of application of the Vollmer, such as the Heaf test and its modifications, should be commended.

Discussion

Dr. Maurice Campagna (New Orleans): There is, and has been, a good deal of controversy as to the value of the Vollmer patch test. Most of the discussion is centered on the accuracy of the test in relation to the accuracy of the intradermal PPD.

The importance of the discussion, however, has been mostly academic with the pros and cons making statements according to their beliefs. None of this serious opposition has ever been based on actual comparative statistical studies. A close analysis of any attempt at comparative studies quickly reveals that there actually is no method whereby the intradermal and the supracutaneous patch test can be reliably compared.

If known cases of tuberculosis are skin tested by the two methods, there is a consistent difference of 10 per cent in the accuracy of one when compared with the other. This observation has been noted repeatedly. I for one found a 10 per cent error in the Vollmer patch test as far back as 1945, when Vollmer was first introduced in the New Orleans Health Department Tuberculosis program.

I have never, to any degree of consistency, been able to determine accurately that the Vollmer patch test gives an appreciable number of false positives. Sporadically, we find a patient who ultimately is not found to have tuberculosis but who gives a false positive. This is true of the PPD as well as the Vollmer. There is not, to my knowledge, an acceptable method of determining whether the Vollmer is wrong when a positive reaction is recorded except by comparing it with the results of the PPD on the same individual. It is questionable if the PPD can be relied on as a yardstick of accuracy under the circumstances.

We find inaccuracy and inconsistency in technique and individual interpretation which will vary within wide ranges. I am not by any means condemning the PPD nor do I feel it should be replaced by the Vollmer. I do, however, feel that until some other proven accurate and simple method of skin testing comes along, the Vollmer patch test has an important field of usefulness in the tuberculosis case finding program.

If it were not for the ready acceptance of skin testing with the Vollmer patch test, in recent years the case finding program would have collapsed, when the State and City Health authorities decided that there was some justification in discontinuing the mass chest x-ray in the light of the publicity given to the danger of man-made radiation. Also the genetic implications of direct radiation has been a problem in

school survey work. This problem has not proven insurmountable with the utilization of the readily acceptable Vollmer patch test in the 18 years and under group of our population.

One of the biggest objections we have encountered in recommending the Vollmer to the professional group has been the idea that the patch does not stay on and that in industrial workers it is difficult to keep the arm clean.

In the pilot study which I supervised in New Iberia we did not find this a great problem and in this paper presented by Dr. Coulter and associates, the percentage of unsatisfactory readings because of the patch dropping off (3 per cent) is consistent with findings in other similar studies (Table 1). I believe that 86.5 per cent completed readings is a good percentage and it is certainly comparable to the percentages in studies with the PPD.

Table 2, in my opinion, reflects the accuracy of the patch test. Were it true that the Vollmer gives false positives, I believe the figures of 12.9 per cent would be much higher. This 12.9 per cent is certainly in line with percentages of positives in a cross section of the population in our area.

Table 4 demonstrates the opinion of those who admitted a 10 per cent error when a Vollmer is compared with a PPD.

A brief review of statistical figures shows that in the New Orleans area in 1959—8,000 Vollmer patch tests resulted in 1,498 positives recorded (suspects). In the same year the combined 70 mm. mass surveys conducted by Charity Hospital, the Bureau of Tuberculosis Control—stationary unit, totaling 61,851, revealed 2,093 suspects. The Vollmer suspects were 1 to 5.5. The 70 mm. suspects were 1 to 30.

In New York, in 1958, the authorities conducted a survey using the Heaf test. Out of 58,370 submitting to this test 11 cases of tuberculosis were found for a percentage of .018. In 1959, the 70 mm. case finding program in the New Orleans area gave a yield of .084 and the Vollmer patch test gave a yield of .024. This would indicate a greater yield in the Heaf test than the Vollmer. However, it also shows that the Vollmer patch test proved superior to the 70 mm. case finding program. We believe it is premature to favorably accept the figures submitted by New York on the results of the Heaf test until further studies indicate that this test is used on a cross section of the population and not on a high incidence group.

In my opinion, figures clearly indicate that with the use of the Vollmer, case finding programs can be kept alive. Without it we would have nothing to inspire and stimulate the interest of the public programs designed to find tuberculosis with the cooperation of the general population.

I would like to emphasize that the subject of this discussion does not imply that the Vollmer patch test is a diagnostic tool. It does have, however, considerable value in case finding and has certain qualities which lend themselves more towards arousing the interest of the public than has simply the x-ray alone.

The Antihypertensive Effect Of Guanethidine Sulfate*

DISCUSSION

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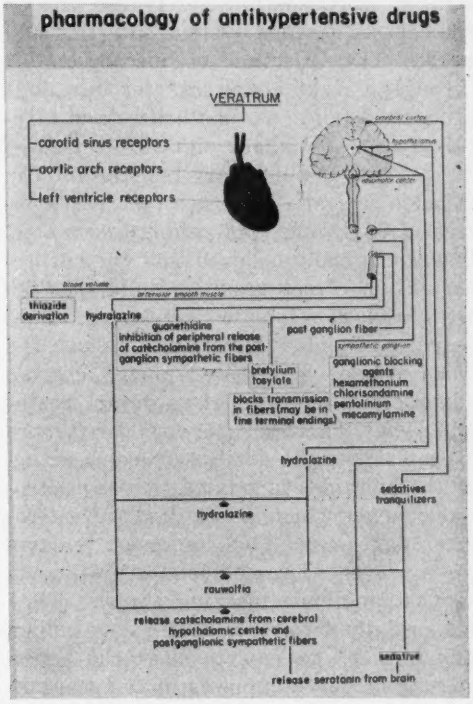
Dr. Dupuy and Dr. Signorelli should be congratulated on their unbiased approach to the evaluation of antihypertensive drugs. The L.S.U. Hypertension Clinic, under their supervision, has produced numerous studies of the many drugs which the pharmaceutical industry has made available. Certainly this report speaks very favorably for guanethidine as an antihypertensive agent. Nineteen out of 25 patients showed initial improvement while 23 out of 25 patients had a sustained response to this agent.

It should be emphasized also that in this study guanethidine alone was used. It is possible that had it been combined with other antihypertensive agents the results would have been even more favorable. We have used guanethidine in a smaller private series of 7 patients with quite similar and gratifying results. It should also be noted that its side effects are certainly minimal. Because of this and its efficacy, guanethidine is fast usurping the place of the ganglionic blocking agents in the treatment of severe hypertension. Caution should, however, be voiced in the use of these potent drugs in patients with renal insufficiency, recent myocardial infarctions, myocardial ischemia, angina, and insufficiency of the carotid or basilar systems. In these a profound drop in blood pressure might result in respectively uremia, a myocardial infarction or a cerebrovascular accident.

Although this study was designed to demonstrate the effectiveness of guanethidine alone, the present trend is to utilize a number of drugs in small amounts so as to obtain the maximal antihypertensive response with the least undesirable effects. To this goal the pharmaceutical chemists have developed a vast armamentarium of agents which attack the problem of hypertension at numerous sites of action (Figure 1). The veratrum alkaloids [1, 2] stimulate the carotid sinus, aortic depressor and left ventricular receptors causing reflex depression of the vasomotor center. The rauwolfia alkaloids [2] are mild sedatives. They release serotonin from the cerebral cortex, as well as liberate catecholamines from central hypothalmic and vasomotor centers. They also cause the release of catecholamines from the postganglionic nerve fibers.



* Discussion of paper by Drs. R. W. Ziegler, J. J. Signorelli, and H. J. Dupuy, presented at the Eighty-first Annual Meeting of the Louisiana State Medical Society, May 10, 1961, and published in the June 1961 issue.

Hydralazine [2] causes dilatation of the constricted vascular muscle and, in addition, depresses the outflow of sympathetic impulses from the hypothalmus and vasomotor center within the medulla. The ganglionic blocking agents [1] block the transmission of impulses through the sympathetic ganglia, thus reducing total peripheral resistance. Of these, hexamethonium and pentolinium simply compete with acetyl choline. Mecamylamine has, however, an entirely different mode of action. It does not simply compete with acetylcholine. Rather, it rapidly diffuses into cells and thus modifies the response of organs to this agent. Mecamylamine reduces the output of acetylcholine from a strip of eserinized muscle. It also acts on the central nervous system, intestine and heart. The injection of mecamylamine through a right atrial catheter into dogs produces a fall in cardiac indices and carotid pressures without significant change in systemic or pulmonary resistance.[3] The thiazide derivatives cause an increased excretion of sodium, potassium, and water. It was originally believed that the antihypertensive effect resulted from the decreased blood volume which ensued.[4] Subsequent studies [5] have shown that the blood volume is restored during chronic administration. Thus the original postulate seems unlikely. It is considered more probable that the antihypertensive action of the thiazides is related to the electrolyte changes which are induced at the local arteriolar level.[2] This, however, remains to be proven. Two compounds are known as postganglionic blocking agents. They are bretylium tolysate and guanethidine. The former [6, 7] seems to block the transmission of nerve impulses in the postganglionic nerve fibers or the fine terminal endings. While guanethidine [8, 9] inhibits the peripheral release of catecholamines from the postganglionic sympathetic nerve fibers.

It would seem that the ideal antihypertensive agent has not as yet been developed. A drug is needed which would be effective in severe as well as mild hypertension and not be wrought with the postural changes of the ganglionic and postganglionic blocking agents. It should be just as effective in the supine as the upright posture and have a minimum of undesirable side effects.

In closing, may I again express my sincere congratulations to Dr. Signorelli and associates for their unbiased evaluation of a very promising drug.

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The Journal of the Louisiana State Medical Society

Established 1844

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News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Ave., New Orleans, La.

The Journal does not hold itself responsible for statements made by any contributor.

Editorial

The Kefauver-Celler Bill Would Hamper The Pharmaceutical Industry

In keeping with the socialistic pattern of legislation advocated by the present Administration, the Kefauver-Celler Bill (S. 1552, H.R. 6245) has been put before the Congress and hearings are now in process. If made into law, this Bill would affect profoundly the operation of the pharmaceutical industry and, in consequence, would have a far reaching effect on the welfare of American Medicine.

The Bill should be opposed vigorously by all physicians on two general principles.

The first feature which makes it objectional is that it would create a powerful bureau of the government, in a position to dominate and direct the most intimate affairs of pharmaceutical manufacturers. The Bill has in it potentiality for controlling of the size of corporations and, possibly, price fixing. The power to withhold a drug from the market in which the decision is based on a matter of opinion would produce an empire with far-reaching power. In other words, bigger government and smaller citizen.

The effects of the Bill on the quality and property of drugs and its ultimate effect on the practice of medicine are of profound importance. The Bill proposes to turn over to the Department of Health, Education, and Welfare and the Food and Drug Administration the responsibility (1) for relaying of drug information to physicians, (2) the selecting of names of new drugs, and (3) deciding whether a drug is of value in the treating of human ills.

It also proposes an alteration in the patent laws, which in effect would mean that after three years the value of the patent to the owner would be, for practical purposes, gone.

In regard to the relaying of information to physicians, this has been and continues a concern of the American Medical

Association. Over a period of years various methods have been pursued by the AMA with obvious benefit to all concerned. Recognizing, however, that the problem has become more difficult, the AMA is in the process of putting into operation an expanded program, in cooperation with the pharmaceutical manufacturers and their association. It will include submission by the manufacturers of their pharmacologic, toxicologic, and clinical data. Analysis by the AMA of this and other data will ensue. Periodic publication by the Journal and by the New and Nonofficial Drugs of information concerning the uses, dosage forms, side effects and hazards of drugs permitted to go on sale by the Food and Drug Administration will make available to the physician whatever is known on a given topic.

This program for dissemination of information is supported financially by the American Pharmaceutical Association, the United States Pharmacopeia, and the AMA, and is directed by a joint committee of the participating groups.

In regard to the names of drugs, it is felt by those with experience in this field that it should be a matter—as it is now—to concern the AMA and then the producer of the drug. When a suitable name is arrived at, the information is sent to other interested parties, which include the World Health Organization, the U. S. Pharmacopeia, the National Formulary and the British Pharmacopeia Commission for any comments that they may wish to make.

It is also felt that the custom of providing a generic name, which is a general type title for the drug, and also, the manufacturer's trade name, should be continued.

Contrary to what the critics may say, the trade name is a protection to the manufacturer. It increases the ultimate economy of his business operations, and also, in opposition to current criticism, only adds about 5 per cent to the cost of the drug to the consumer.

In the third phase of the effect of the proposed legislation, that is, deciding whether a drug is valuable in treating human ills, the opposition of the profession is even more important than in regard to the two just covered. At present, the Food and Drug Administration has the responsibility of determining the purity and safety of a new proposed drug. It can prevent the marketing of useless or dangerous drugs. It can remove a drug from the market. With this provision the present law is operating satisfactorily. Under the proposed law, "patents could not be granted for any molecular or other modification of any patented or unpatented drug or for the combination of two or more drugs unless: (a) the Patent Commissioner has determined that the change made by the modification or combination would not have been obvious to a person having ordinary skill in the development of drugs and (b) the Secretary of Health Education, and Welfare has determined that the therapeutic effect of the modification or combination is significantly greater than the drug or drugs in their original state."

The danger in this far-reaching provision is obvious. The only satisfactory way in which the efficacy of a drug can be determined is the cumulative clinical experience of the American physician in the use of the drug. Only the physician has the knowledge, ability, and responsibility to make a decision as to what drug is best for a particular patient.

An additional feature of the bill in regard to change in patent laws would deprive the manufacturer of a successful drug of the fruits of his research. In so doing it would dry up initiative, retard investigative procedures, and hamper the contributions the pharmaceutical houses have made to the advancement of American medicine.

Of the top twenty-five drugs most frequently prescribed by physicians today, that is, the therapeutically most useful drugs, six are combinations. Of the remaining nineteen, twelve were born in the laboratories of the U. S. pharmaceutical

industry. One each was discovered in Yale and Oxford, and the other five came from the competing pharmaceutical industries in Germany, France, and Austria.

American medicine today has the best drugs it ever had, and has the best in the world. The pharmaceutical industry is indispensable and an active factor in the production of these drugs. It should not be hampered by socialistic legislation.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

PARTIAL REPORT ON ACTIONS OF THE HOUSE OF DELEGATES AMERICAN MEDICAL ASSOCIATION 110th ANNUAL MEETING

June 25-30, 1961

New York City

Osteopathy, medical discipline, communications, surgical assistants, drug legislation, general practice residencies, relations with allied health professions and services, and poliomyelitis vaccine were among the major subjects covered by 115 resolutions and 28 reports acted upon by the House of Delegates at the American Medical Association's 110th Annual Meeting held June 25-30 in New York City.

Dr. George M. Fister of Ogden, Utah, member of the AMA Board of Trustees and previously a member of the House of Delegates, was named president-elect of the Association. Dr. Fister will become president at the June, 1962 annual meeting in Chicago, succeeding Dr. Leonard W. Larson of Bismarck, North Dakota, who assumed office at the Tuesday night inaugural ceremony in New York.

The AMA 1961 Distinguished Service Award was voted to Dr. Walter H. Judd of Minneapolis, physician and member of Congress, for his contributions as a medical missionary, humanitarian and statesman devoted to world peace.

Total registration through Thursday, with half a day of the meeting still remaining, had reached 56,315, including 22,681 physicians.

Osteopathy

In considering a report of the Judicial Council and three resolutions on the subject of osteopathy, the House of Delegates agreed with the intent of the report and resolutions, but adopted the following statement of AMA policy:

"1. There can never be an ethical relationship between a doctor of medicine and a cultist, that is, one who does not practice a system of healing founded on a scientific basis.

"2. There can never be a majority party and a minority party in any science. There cannot be two distinct sciences of medicine or two different, yet equally valid systems of medical practice.

"3. Recognition should be given to the transition presently occurring in osteopathy, which is evidence of an attempt by a significant number of those practicing osteopathic medicine to give their patients scientific medical care. This transition should be encouraged so that the evolutionary process can be expedited.

"4. It is appropriate for the American Medical Association to **reappraise its application of policy** regarding relationships with doctors of osteopathy, in view of the transition of osteopathy into osteopathic medicine, in view of the fact that colleges of osteopathy have modeled their curricula after medical schools, in view of the almost complete lack of osteopathic literature and the reliance of osteopaths on and use of medical literature, and in view of the fact that many doctors of osteopathy are no longer practicing osteopathy.

"5. Policy should now be applied individually at state level according to the facts as they exist. Heretofore, this policy has been applied collectively at national level. The test now should be: Does the individual doctor of osteopathy practice osteopathy, or does he in fact practice a method of healing founded on a scientific basis? If he practices osteopathy, he practices a cult system of healing and all voluntary professional associations with him are unethical. If he bases his practice on the same scientific principles as those adhered to by members of the American Medical Association, voluntary professional relationships with him should not be deemed unethical."

Medical Discipline

In a major move designed to strengthen the profession's disciplinary mechanisms, the House approved the conclusions and recommendations of the Medical Disciplinary Committee, with only three word changes. The House discharged the committee with thanks and commendation and directed that its functions be assumed as a continuing activity of the Judicial Council.

One recommendation suggests that "The by-laws of the American Medical Association be changed to confer original jurisdiction on the Association to suspend or revoke the AMA membership of a physician guilty of a violation of the Principles of Medical Ethics or the ethical policy of the American Medical Association regardless of whether action has been taken against him at local level."

Another "encourages and urges that each state association report annually to the American Medical Association all major disciplinary actions taken within its jurisdiction during the preceding calendar year."

The report urged state and county medical societies to utilize grievance committees as "grand juries" to initiate action against an offender so as to obviate the necessity of making an individual member of a medical society complain against a fellow member.

The House suggested that each medical school develop and present a required course in ethics and socio-economic principles, and that each state board of medical examiners include questions on ethics and proper socio-economic practices in all examinations for license.

The report concluded with a recommendation that "American medicine at the national, state and local level maintain an active, aggressive and continuing interest in medical disciplinary matters so that, by a demonstration of good faith, medicine will be permitted to continue to discipline its own members when necessary."

Communications

Acting upon four resolutions related to the Association's public relations program, the House adopted a substitute resolution directing the Speaker of the House of Delegates to name seven elected members of the House as a special committee "to study and continually advise the Board of Trustees on the broad planning and coordination of all phases of communications of the American Medical Association, so that the public and the members of the medical profession are properly and adequately advised of the policies and concern of the medical profession with respect to all phases and aspects of medical care for all people."

The House agreed with a reference committee opinion that "we have a very adequate Division within the A.M.A. capable of implementing any program of communications." The approved committee report also said that "the Communications Division of the A.M.A. needs the active support and cooperation of the House and of all members of the Association."

Surgical Assistants

In considering a Board report and two resolutions on the subject of surgical assistant's fees, the House approved the following five basic principles developed by the Judicial Council and the Council on Medical Service:

"1. Each member of the A.M.A. is expected to observe the Principles of Medical Ethics in every aspect of his professional practice.

"2. Each doctor engaged in the care of the patient is entitled to compensation commensurate with the value of the services he has personally rendered.

"3. No doctor should bill or be paid for a service which he does not perform; mere referral does not constitute a professional service for which a professional charge should be made or for which a fee may be ethically paid or received.

"4. It is ethically permissible for a surgeon to employ other physicians to assist him in the performance of a surgical procedure and to pay a reasonable amount for such assistance.

"This principle applies whether or not an assisting physician is the referring doctor and whether he is on a per-case or full-time basis. The controlling factor is the status of the assisting physician. If the practice is a subterfuge to split fees or to divide an insurance benefit, or if the physician is not actually employed and used as a bona fide assistant, then the practice is contrary to ethical principles.

"5. Under all other circumstances where services are rendered by more than one physician, each physician should submit his own bill to the patient and be compensated separately."

Efficacy of Drugs

The House strongly endorsed a Board report which pointed out the problems that would result from amending the Food, Drug and Cosmetic Act to authorize the Food and Drug Administration to determine the efficacy, as well as the safety, of a prescription drug prior to the approval of a new drug application. The A.M.A. will oppose such legislation before the Kefauver Committee, the report pointed out, on the basis that "a decision with respect to the effectiveness of drugs is dependent upon extended research, experimentation and usage." The House agreed that vesting such authority in the Food and Drug Administration would operate to limit research, the marketing of drugs and the exercise of discretion by the medical profession. "The marketing of a relatively useless drug is

infinitely less serious than would be the arbitrary exclusion from the market of a drug that might have been life saving for many persons," the House declared.

General Practice Residencies

Eight resolutions were introduced on the subject of creating new two-year residency training programs in general practice. The House agreed that there appears to be a need for such programs for those individuals who desire more experience in obstetrics and surgery than may be available in the currently existing Family Practice Program. It approved a substitute resolution directing the Council on Medical Education and Hospitals to consider for approval other two-year programs in general practice which incorporate experience in obstetrics and surgery. The Council will review these programs on the basis of their individual merits and conduct a long-range evaluation of the new programs as well as the previously established Family Practice Programs.

Relations With Other Health Professions and Services

The House considered a Board report and twelve resolutions dealing with various aspects of medicine's relationships with allied health professions and services, including optometry. The Board report recommended the creation of a new A.M.A. Council to handle all the problems involved. The House, however, accepted a reference committee suggestion for establishment of a new Commission to Coordinate the Relationships of Medicine with Allied Health Professions and Services. The Commission will be composed of seven members appointed by the Speaker of the House. Subcommittees, composed of from three to five members selected by the Commission from lists of names submitted by the scientific sections, will consider problems in specific areas. The Commission will correlate and catalogue the reports of the subcommittees and will act as liaison agent between the subcommittees and those A.M.A. Councils where there may be overlapping interests.

Polio Vaccine

The House approved a report by the Council on Drugs on the present status of poliomyelitis vaccination in the United States and urged that it be made available to all physicians through the most effective communications media.. The report clearly outlines procedures recommended for implementation of mass vaccination with the new oral vaccine when it becomes available. The House complimented the Council on its "clear and succinct statement on the initiation of the new campaign which will be needed to promote the new vaccine." The House agreed that the report provides the practicing physician with a reliable series of answers to the many questions which will arise during the changeover from Salk vaccine to oral vaccine. The report emphasizes, however, that "physicians should encourage, support and extend the use of Salk vaccine on the widest possible scale at least until the oral polio-virus vaccines currently under development and clinical trial become available."

Miscellaneous Actions

In dealing with resolutions and reports on a wide variety of other subjects, the House also:

Approved the **"Guides to Physician Relationships with Medical Care Plans,"** submitted by the Council on Medical Service, with these two changes: deletion of item 5 under "Responsibilities of the Medical Society," which said "To recognize that properly qualified physicians employed by, or otherwise serving, medical care plans should not be denied professional rights and privileges because of their service to such plans," and addition of a new item 1 under "Responsibilities of the Medical Care Plan," which reads: "To provide the beneficiary of the plan with free choice of qualified physicians";

Reaffirmed its support of the **Kerr-Mills** program for the needy and near-needy aged and its opposition to any legislation of the **King-Anderson** type, declaring that the medical profession "will not be a willing party to implementing any system which we believe to be detrimental to the public welfare";

Approved a markedly expanded **drug information program** submitted by the Board of Trustees and the Council on Drugs;

Adopted the final report of the **Special Study Committee** of the Council on Medical Education and Hospitals and recommended that copies be sent to all medical school deans in the United States; Decided to hold the **1963 Clinical Meeting** in Portland, Oregon, instead of Las Vegas Nevada, as recommended by the Board;

Approved a plan by the new A.M.A. Department of International Health to cooperate in the recruitment of volunteer physicians for emergency medical service in **foreign mission fields;**

Agreed to an increase of $20 in the annual A.M.A. **membership dues** to be implemented over a period of two years: $10 on January 1, 1962, and $10 additional on January 1, 1963;

Discontinued the Association's **General Practitioner of the Year** award;

Opposed legislative and administrative mandates which would compel physicians to prescribe drugs, or require pharmaceuticals to be sold, by **generic names** only;

Reaffirmed the Association's opposition to compulsory inclusion of physicians under the **Social Security** system;

Urged immediate legislation that will provide strong economic motivation for the construction and maintenance of **fallout shelters;**

Disapproved two resolutions which would have discontinued the scientific activities at the **Clinical Meeting;**

Urged **immunization campaigns** against both tetanus and influenza, and

Asked state and county medical societies to give full support to the **First National Congress on Medical Quackery** to be jointly sponsored next October 6-7 in Washington, D. C., by the A.M.A. and the Food and Drug Administration.

Opening Session

At the opening session on Monday, Dr. E. Vincent Askey of Los Angeles, retiring A.M.A. president, challenged physicians and medical organizations to re-examine their own efforts to strengthen and improve medicine, and he warned against defeatism and failure to accept personal responsibility for answering criticisms. Dr. Larson, then president-elect, called on the profession to strengthen methods of self-discipline in both the state and county societies, adding that physicians must be concerned with improper or incompetent practice and unethical actions of all kinds. The 1961 Goldberger Award in Clinical Nutrition was presented to Dr. Frederick J. Stare, chairman of the Department of Nutrition at Harvard Medical School.

Inaugural Ceremony

Dr. Larson, in his inaugural address Tuesday night, said that the really good doctor, guided by the professional spirit, will always remember that medicine exists for just one purpose—to serve humanity. When the essence of that spirit is diluted or destroyed, either in an individual physician or in a nation, he added, medicine ceases to be a profession in the highest sense of the word. Dr. Larson also presented the Distinguished Service Award medal to Rep. Judd. Entertainment highlight of the inaugural program was a concert by the Montgomery County Medical Society Glee Club of Dayton, Ohio.

Election of Officers

In addition to Dr. Fister, the new president-elect, the following officers were named at the Thursday session:

Dr. Eustace A. Allen of Atlanta, Ga., vice president; Dr. Norman A. Welch of Boston, re-elected speaker of the House, and Dr. Milford O. Rouse of Dallas, Tex., re-elected vice speaker.

Elected to the Board of Trustees were Dr. Wesley W. Hall of Reno, Nev., to succeed Dr. Fister; Dr. Homer L. Pearson, Jr., of Miami, Fla., to replace Dr. Julian P. Price of Florence, S. C., and Dr. Charles L. Hudson of Cleveland, Ohio, to fill out the term of the late Dr. Cleon A. Nafe of Indianapolis. The Board named the following officers: chairman, Dr. Hugh Hussey of Washington, D. C.; vice chairman, Dr. Percy Hopkins of Chicago, and secretary, Dr. James Z. Appel of Lancaster, Pa.

Named to the Judicial Council were Dr. Robertson Ward of San Francisco, to succeed himself, and Dr. Elmer G. Shelley of North East, Pa., to replace Dr. Pearson.

Re-elected to the Council on Constitution and Bylaws was Dr. Walter E. Vest of Huntington, W. Va.

New Members of the Council on Medical Service are Dr. Charles Ashworth of Providence, R. I., succeeding Dr. Carlton Wertz of Buffalo, N. Y., and Dr. Burtis E. Montgomery of Harrisburg, Ill., to succeed Dr. Charles Hudson of Cleveland.

For the Council on Medical Education and Hospitals, Dr. Dwight L. Wilbur of San Francisco was elected to succeed Dr. John W. Cline of the same city, and Dr. Kenneth C. Sawyer of Denver, Colo., was named to succeed Dr. Guy A. Caldwell of New Orleans.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Ascension	Third Tuesday of every month	
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Jefferson	Third Thursday of every month	
Lafayette	Second Tuesday of every month	Lafayette
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

IN-PATIENT RECORDS OF CHARITY HOSPITAL MADE AVAILABLE TO MEMBERS OF THE LOUISIANA STATE MEDICAL SOCIETY

The Board of Administrators of Charity Hospital, at their last meeting, discussed and gave careful consideration to the matter of making in-patient records available to all members of the Louisiana State Medical Society, and the following policy was adopted:

Upon presentation of proper identification, all members of the Louisiana State Medical Society will be issued visitors' cards which will allow them to review patients charts and interview patients in Charity Hospital. However, they will not be permitted to examine patients or remove dressings without permission from the resident in charge of the patient.

Visitors cards will be issued from the Doctors' information Desk or from the Director's Office.

The Doctors' Information Desk is open from 7. a.m. to 9:30 p.m., every day, seven days a week.

The Director's Office is open from 9 a.m., to 5 p.m., Monday through Friday.

In emergencies occurring from 9:30 p.m., to 7 a.m., permission must be obtained from the resident in charge of the patient.

Records of visits, time of entrance and exit, are to be maintained by the office issuing visiting cards.

THIRTEENTH POSTGRADUATE ASSEMBLY IN ENDOCRINOLOGY AND METABOLISM

Under the Co-Sponsorship of The Endocrine Society and The National Institutes of Health
Bethesda, Maryland
October 2-6, 1961

A comprehensive review of clinical endocrine problems and current research activity in these areas will be presented. For further information, write to: Dr. Roy Hertz, National Institutes of Health, Building 10, Bethesda 14, Maryland. The fee will be $100.00 for physicians, with a reduction to $30.00 for Residents and Fellows. Enrollment limited to 100.

UROLOGY AWARD

The American Urological Association offers an annual award of $1000 (first prize of $500, second prize $300, and third prize $200) for essays on the result of some clinical or laboratory research in Urology. Competition is limited to Urologists who have been graduated not more than ten years, and to hospital internes and residents doing clinical or laboratory research work in Urology. Animal research is not necessary.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Bellevue - Stratford Hotel, Philadelphia, Pennsylvania, May 14-17, 1962.

For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore 1, Maryland. Essays must be in his hands before November 15, 1961.

COURSE IN POSTGRADUATE GASTROENTEROLOGY

The American College of Gastroenterology announces that its Annual Course in Postgraduate Gastroenterology will be given at the Sheraton-Cleveland in Cleveland, Ohio, on 26, 27, 28 October 1961.

The faculty for the Course will be drawn from the medical schools in and around Cleveland. The subject matter to be covered in the Course, from a medical as well as a surgical viewpoint, will be, essentially, the advances in diagnosis and treatment of gastrointestinal diseases. There will be comprehensive discussions of pancreatic disease, biliary tract disease, electrolytes, peptic ulcer, etc.

There will be an "X-ray Classroom" on the last afternoon, presented by an outstanding panel of specialists who will answer questions and

present instructional demonstrations. There will also be a class in Cinegastrophotography.

One complete session will be held at the Cleveland Clinic and one at the Cleveland Academy of Medicine.

For further information and enrollment write to the American College of Gastroenterology, 33 West 60th Street, New York 23, N. Y.

EXPECTANT MOTHER SURVIVES SURGERY USING HEART-LUNG MACHINE

An expectant mother has survived an operation in which a heart-lung machine was used for 20 minutes, it was reported today in the current (June 24) Journal of the American Medical Association.

A team of surgeons at the University of Washington School of Medicine, Seattle, said the operation shows that a heart-lung machine may be used safely insofar as the health of the mother is concerned, but the effect on the unborn child "remains in doubt."

The machine takes over the work of the heart and lungs while the heart is being operated on.

In the case reported, the 23-year-old mother gave birth to a son five months after the operation but the infant, born with a number of defects, lived for only four months, Drs. Robert Leyse, Milford Ofstun, David H. Dillard and K. Alvin Merendino said. The woman subsequently gave birth to a healthy son, they said.

A severe congenital heart defect in the patient associated with an unusual combination of circumstances necessitated the operation during pregnancy, the surgeons said.

The open-heart surgery required that the patient's total blood circulation be handled by the heart-lung machine, a procedure termed total body perfusion, they said. Fortunately, they said, the need for total body perfusion for correction of a heart defect in an expectant mother "will be extremely rare."

"To our knowledge, this was the first instance in which a pregnant woman was subjected to total body perfusion," the authors said.

INVESTIGATE ASPIRIN POISONINGS IN CHILDREN

A study of 94 accidental aspirin poisonings in children reveals that in all but one instance the child had been told the pills were "candy."

The study was reported by Dr. Roger J. Meyer, Boston, in the July American Journal of Diseases of Children, published by the American Medical Association.

"The entire group of children with but one exception had previous experience with acetylsalicylic acid (aspirin), usually the flavored variety," Dr. Meyer said.

"This medication was used for virtually **every** illness or indisposition suffered by family members with or without fever. Parents admitted that they encouraged acceptance by presenting it to children as 'candy,' and felt that this was an important factor in their children's ingestion of acetylsalicylic acid."

The cases studied involved children from one to five years old and were selected from 313 cases reported to the Boston Information Center during a 12-month period.

The study showed that 62 of the children shared the aspirin with playmates and sweetened aspirin was taken by the youngsters in 84 instances, Dr. Meyer said.

Of the 94 cases, 73 occurred after aspirin had been used to treat another member of the family, he said. The majority of the poisonings, 56.5 per cent, occurred less than an hour before the child's mealtime, he said.

Dr. Meyer said the predominating circumstance in the home at the time of the poisonings fell into one of three categories.

In 17 cases, aspirin was being used for an illness in the family. In 29 cases, precautions had been taken but the child showed unusual resourcefulness in obtaining the tablets. In 48 cases, there was generally unsatisfactory health supervision or lack of understanding of children's needs.

"All families had a special place for medications, but two factors eliminated this family safeguard: (1) family ignorance concerning the dangers of acetylsalicylic acid and (2) general lack of safety precautions against household hazards," Dr. Meyer commented.

Aspirin is not only the most common childhood poison, but its widespread use, attractive taste, as well as the late appearance of its toxic symptoms make it a particular threat to families with young children, he said.

SCIENTIFIC PAPER AWARD CONTEST

Southeastern Surgical Congress announces the prize scientific paper award contest eligible to residents of approved hospitals in the Southeastern States for the best scientific papers.

Papers are due at the Congress office at 340 Boulevard NE, Atlanta 12, Georgia, before December 1, 1961. The prize for the first place winner is an all-expense paid trip to the meeting at Louisville, Kentucky, March 5, 6, 7, 8, 1962, plus a cash award. Dr. Ira A. Ferguson is Chairman of the Committee.

AMERICAN HEART ASSOCIATION'S 1961 SCIENTIFIC SESSIONS TO INCLUDE 6 PROGRAMS ON CLINICAL CARDIOLOGY

Six sessions on clinical cardiology will be included in the 34th annual Scientific Sessions of the American Heart Association, to be held October 20-22 at the Americana Hotel, Bal Harbour, Miami Beach, Florida. A panel or sym-

posium including related investigative work will be presented at each clinical session.

In addition, a total of 18 other scientific sessions will be held concurrently during the three-day program.

A tentative outline of the program follows:

Friday, October 20: The sessions on clinical cardiology include an opening address by Dr. Oglesby Paul, AHA President; the Conner Memorial Lecture, by Dr. Clark H. Millikan, Professor of Neurology, Mayo Clinic; symposia on "Contribution of Phonocardiography to Auscultation," and on "Coronary Arteriography;" a lecture on "Biplane Angiography" by Dr. Herbert L. Abrams, Assistant Professor of Radiology, Stanford Medical Center. Concurrent sessions are scheduled on arteriosclerosis, on biophysical methods in the study of circulation, and on high blood pressure research. A program for nurses is also scheduled concerning cardiovascular research as it relates to care of the cardiac patient.

Saturday, October 21: The clinical sessions will include a panel on "Ventricular Arrhythmias;" a lecture on "Closed Chest Cardiac Resuscitation" by Dr. James R. Jude, Johns Hopkins Hospital; the Brown Memorial Lecture on "Physiology of the Peripheral Circulation," by Dr. Robert W. Wilkins, Professor of Medicine, Boston University School of Medicine; and a symposium on "Renal Failure." Simultaneous scientific sessions will be held in the fields of basic science, cardiovascular surgery, and on "Compensable Heart Disease, Strain and Trauma."

Scheduled for Saturday evening are "Cardiac Conferences," which will give physicans an opportunity to participate in small group discussions on timely cardiovascular problems.

Sunday, October 22: Subjects for the clinical sessions include a symposium on "The Role of Hormones in Heart Failure;" panels on "Ventricular Hypertrophy and Bundle Branch Block" and "Newer Electrocardiographic Lead Systems;" and a lecture on "ECG Clues Suggesting Myocardial Infarction" by Dr. Junior A. Abildskov, Assistant Professor of Medicine, State University of New York College of Medicine. Concurrent sessions will be held on rheumatic fever and congenital heart disease and on cardiovascular surgery. Cardiovascular films, with introduction and commentary by the author or other authority on the subject of each film, will be shown throughout Sunday.

As in previous years, scientific and industrial exhibits will be on display.

Registration forms, which include applications for hotel reservations, are avaiable from the American Heart Association, 44 East 23rd Street, New York 10, N. Y.

NEW COMPOUND RATED TOPS FOR SKIN INFECTION

A new compound has produced excellent results in the treatment of a fungus skin infection known as tinea versicolor.

The infection causes fawn-colored scaly spots over the upper part of the body.

Writing in the April 8 Journal of the American Medical Association, Dr. Erwin H. Zimmerman, Huntington, N. Y. said the new agent, 9-aminocridinium 4-hexylresorcinolate (Akrinol), "far surpasses any medication" he has previously used.

Dr. Zimmerman said a preliminary study produced "excellent results" as reflected by a relatively short period of therapy required for clearing of the infection, a complete lack of side effects, ease of application and cosmetic acceptability of the preparation, and an exceptionally low incidence of recurrences.

The new compound was used to treat 40 patients, the majority of whom had had the disease for two to three years. Treatment was continued for four to eight weeks.

Of the 40 patients, 34 or 85 per cent showed excellent results with complete clearing of the infection after the first course of treatment. Five showed a good response with complete clearing after two courses of treatment. Only one had a consistently poor response.

BOOK REVIEWS

Fundamentals of Chest Roentgenology; by Benjamin Felson, M. D. (Saunders), 1960, 301 p. $10.00.

This small (300 page) well illustrated book effectively accomplishes its mission. Dr. Felson's narrative is interesting and concise, although a bit dogmatic. This however is acceptable in a book which deals with the fundamentals of a subject rather than an exhaustive treatise.

The chapters are divided to cover each portion of the thorax and its contents (example—lobes, segments, hili, pleura). It does not attempt to illustrate all the possibilities of every chest disease or abnormality. It instead expresses an approach to understanding the meanings of shadows, silhouette signs, air bronchograms, etc.

The only possible flaw in the book is that the illustrations frequently are cropped to show only one fourth or one half of the entire radiograph—thus preventing the reader from viewing the illustrated abnormality in its setting of the entire X-ray film.

The book has a complete bibliography. It can be highly recommended to those interested in techniques of chest X-ray interpretation.

W. JOHN O'SHAUGHNESSY, M. D.

Chemical Osteosynthesis in Orthopaedic Surgery; by Michael P. Mandarino, M. D., Charles C Thomas—1960, 72 p., price $4.50.

The Publisher indicates that the book is an "American Lecture Series".

It has a one page preface by Dr. Mandarino in which he gives credit and thanks to those who have helped him.

Pages 3 through 17 are devoted to the history and chemistry of the polyurethanes, and of "Ostamer", the developed plastic to which the book is devoted. This section may be of interest to a chemist.

Pages 18 through 24 are titled "Tissue Response to Ostamer" and discusses the reactions of rats, guinea pigs, pigs and dogs to implants of "Ostamer". The reaction of the human body to "Ostamer" was not indicated.

Pages 25 through 29 are Titled "Histology" and describe the reaction of three dog femurs to "Ostamer".

Pages 30 through 37 are titled "Indications for Surgery", and "pathologic fractures, bone cysts, acute fractures that are prone to complication, spine fusions, and other joint fusions," are listed. Then, under healing of "Non-union", Ostamer is recommended in infected cases of non-union. "Infection is no barrier to Union", "if weight bearing can be attained." "Even if dressings must be changed as often as five times daily, weight bearing should be insisted upon."

Pages 38 through 41 are titled "Techniques of Surgery" and illustrated is a massive exposure of what appears to be an entire tibia and fibula exposed by means of an incision over the bare area of the tibia, from below the knee to just above the ankle. These bones are really stripped, a strip of cortex removed, the medullary canal scraped out, steel rods inserted, and Ostamer poured in ad lib. "Ostamer is as strong as the mass that can be implanted" is stressed and I rather get the impression that it is desirable to cut out and discard a lot of what seems to be good bone, so that a large mass of Ostamer may fill its former site. This procedure is called "The classical Mandarino operation".

Pages 42 through 63 are titled "Review of Fifty Cases Operated by the Author". For some reason, not clear to me, he mentions "a total of three hundred cases has been treated with Ostamer . . . " "Of these . . . 94 per cent have had successful results", and then discusses "the fifty cases personally operated . . . " I feel that, if a man has 300 cases, he should present 300 cases.

This book presents an interesting, but far from convincing case for the use of Ostamer in the treatment of fractured bones. Since Ostamer is space filling, and stronger "en masse", it is my impression that it may have some conceivable use in pathological fractures and, possibly, in bone cysts. As represented in his book, it is certainly not an ideal "bone glue".

ROBERT M. ROSE, M. D.

Resuscitation of the Newborn Infant; edited by Harold Abramson, M. D. The C. V. Mosby Company, 1960, 274 p., price $10.00.

To quote from the author's preface, this is "the story of the resuscitation of newborn infants—what we know and what we do not know." These few words sum up the meat of the book and what important words they are!

Here is a book that has more material in it than the reviewer has ever read on the subject. It gives the physiology, biochemistry, and pathology of the fetus and the newborn infant in great detail. In addition, it covers the examination of the mother, her obstetric history and management and the complete handling of the baby and its complications at birth. It goes into details on the drugs given to the mother and the baby, the resuscitators, and care of the baby from birth into the recovery nursery for newlyborns to the main nursery. The recovery nursery is a thing we do not have and after reading the details of this one, I think it is as valuable as the surgical recovery room is to a hospital.

The purpose of this book is to help reduce human wastage, to emphasize how every detail of the care of the mother affects the baby; how recognition of the infant's difficulty and knowledge of all available resuscitators and drugs may save our newborns.

The reviewer cannot overemphasize the pains to which the author has gone to show how the mortality rate of the newlyborns can be lowered. This book belongs in the library of the obstetrician and the pediatrician.

SUZANNE SCHAEFER, M. D.

Atlas of Anatomy and Surgical Approaches in Orthopedic Surgeries, Volume II, the Lower Extremities; by Rodolfo Cosentino, Charles C Thomas, 1960, 264 p., price $14.00.

Since I have had the opportunity to review the initial volume of the Upper Extremity, I find that in going through the book and its contents, again I am struck by the clarity of the entire presentation with the facts and figures given so specifically and concisely, and yet kept to a minimum of detail, which is all noted in the plates. The plates show extremely beautiful dissection of all of the segments with exceptionally

clear photography, so that nothing is lost by shadows or improper presentation such as the usual type of coloring found in many other works.

The fact again that interests this reviewer is the idea of placing the literature describing the part that is dissected out to the left, and having the plate on the right, so the individual who reads can go from one to the other with the book completely open, and not have to flip through a half dozen pages in an attempt to get to the subject under discussion. This, we feel, lends itself to an exceptionally good book for anybody who is in the field of orthopedic surgery.

As previously stated, I feel that the medical student in anatomy, the surgeon who does any type of peripheral work, and even the general practitioner who is interested in the anatomical problems that exist in the extremity and attempts to relate it to the pathology signs and symptoms will be greatly benefitted by the use of this book. I feel again, as I did before, that this is without a doubt the finest work that I have seen in the field of orthopedic anatomy and surgical approach.

H. R. SOBOLOFF, M. D.

Current Surgical Management II. A Book of Alternative Viewpoints on Controversial Surgical Problems; Edited by John H. Mulholland, M.D., Edward H. Ellison, M. D., and Stanley R. Friesen, M. D., with contributions by 50 authorities. Pp. 348. Philadelphia and London, W. B. Saunders Company, 1960. Price $8.00.

Three years ago, in 1957, the editors of this volume published another volume with precisely the same title. This reviewer's first reaction, on seeing the second volume, was to wonder whether there was any real need for it.

There is. For one thing, the controversial problems discussed in the first volume are still very much with us and, for the most part, are as controversial as they were in 1957. For another, this book, as the editors point out explicitly in the preface, "is not a second edition, or a revision, but rather an extension." Finally, the editors have not only avoided any repetition of their original subject matter, they have also imported new blood. With the exception of the editors themselves, only two of the contributors to the first volume appear in the second.

A comparison of the tables of contents of the two volumes shows that the only material which reappears in the second volume concerns the management of duodenal ulcer and its complications, and the need for that extension is obvious. This is a complex lesion, as the multiple procedures devised for its management make evident. The second volume introduces viewpoints not touched upon in the first, including the radiation treatment of duodenal ulcer, wedge resection, and various adjunct procedures designed to supplement vagotomy.

The second volume, like the first, covers a broad spectrum of anatomic systems, but different components are dealt with. To use the biliary system as an example, in the first volume the discussion concerns the surgical versus the nonsurgical management of acute cholecystitis. In the second volume, the common bile duct is the focus of attention and there is an interesting debate on the pros and cons of operative cholangiography; the use or omission of T-tube drainage; and the selection of a technique for the repair of ductal strictures. To use another illustration, in the first volume benign diseases of the pancreas are discussed, including pancreatitis and cysts and pseudocysts. In the second volume, attention is directed to the choice of surgery for carcinoma of the head of the pancreas. In the first volume, sphincterotomy is discussed in the pancreatitis and pseudocyst. In the second volume, the discussion is extended to the question of whether or not a normal gallbladder should be removed when this operation is done.

In the second volume, the section devoted to the vascular system is considerably enlarged. The symposium on the management of insufficiency of the peripheral arterial vessels includes conservative measures, the use of grafts, thromboendarterectomy, and lumbar sympathectomy.

There is a timely discussion of acute renal failure, covering diet, fluid regulation, the use of the artificial kidney, and peritoneal dialysis. It is unfortunate, though unavoidable, that the book is too short to permit a fuller discussion of the disturbed chemistry and physiology present in this condition. Another timely discussion concerns preoperative preparation for resection of the colon, with the pros and cons of antibiotic therapy.

As in the first volume, the presentations in the second are concise, lucid, and highly informative. There are brief but well selected bibliographies attached to each chapter, and they, with the text, offer points of departure for those who wish to pursue the various subjects further.

The format of the book is attractive, but one could wish that the editors had provided a somewhat more comprehensive index.

When this reviewer first looked at this volume, in addition to speculating whether it was really justified, he also decided that it would not be necessary to purchase it. After reading it, he concluded, as this review indicates, that it was indeed justified and that it deserves a place on every surgeon's library shelf.

H. REICHARD KAHLE, M. D.

Practical Neurological Diagnosis, With Special Reference to the Problems of Neurosurgery. Edition 6. By R. Glen Spurling, M. D. Springfield, Charles C Thomas, Publisher, 1960. Price $6.75.

One may be certain that a medical text that has

reached the eminence of a sixth edition (one edition with two printings) within twenty-five years is a useful book, for which a real need continues to exist. It is easy to see why the demand for this book continues: It brings together, within brief compass, in a well organized, systematic fashion, the fundamental clinical facts upon which a neurological diagnosis is based.

This is a small book and, of necessity, its field is limited. But the author, in the sixth edition, as in preceding editions, has done exactly what he has set out to do. A distinguished neurosurgeon himself, Dr. Spurling had his training under Harvey Cushing, perhaps the greatest neurosurgeon who ever lived. The technique of neurological examination upon which this book is based is the technique he learned from Cushing at the Peter Bent Brigham Hospital, where, as he writes in the preface to the sixth edition, he personally witnessed the precision with which surgical lesions of the central nervous system were localized in Cushing's patients.

When the first edition of *Practical Neurological Diagnosis* was published in 1935 (written because Spurling could find no satisfactory similar text for his own students), neurology and neurosurgery were still somewhat embryonic specialties. Such diagnostic aids as electroencephalography did not exist, and the potentialities of neuroradiology, particularly pneumoencephalography and ventriculography, were not generally employed. In successive editions, these techniques were included in Dr. Spurling's book until, like many another teacher, he found his students becoming unduly fascinated by them. As a result, they were losing sight of the importance of the clinical information to be secured by simple history-taking and physical and neurological examination, the proper interpretation of which is the real key to neurological diagnosis.

So, in his sixth edition, the author has reverted to the plan of his first edition. Supplemental diagnostic aids are omitted. His approach to neurology is entirely clinical, with the emphasis upon his own specialty of neurosurgery. The patient who is studied by the methods described can count himself fortunate. He will have had a good examination. If he has a central nervous system lesion, his physician will have all the basic facts concerning it and will know what supplementary diagnostic aids should be invoked. In short, this book meets the needs of students and physicians who are called upon to make neurological examinations.

The format of this book is cleancut and attractive. The illustrations (70 in number) are all of practical value and are well reproduced. The material is arranged logically. Neurology and neurosurgery are complicated subjects, but their inherent difficulties have been overcome, and the presentations are lucid and remarkably easy to read. The brief bibliography includes most of the major standard texts in this field. The glossary should be very useful to beginners. The index, which covers 44 pages, is detailed and comprehensive. The publisher, with sound restraint as well as great good sense, has added to the usefulness of the book by keeping the price reasonable.

A number of books on neurological diagnosis have been published within the last year or two. This book is in no sense competitive with them. It is directed toward a special audience, and it has, as every preceding edition has had, a single purpose, "to present a simple account of the principles of neurological diagnosis." How admirably that purpose has been fulfilled is evident in the publication of this sixth edition, which implies the continued popularity of the book among undergraduate and graduate students, general practitioners, house staffs, young neurologists and psychiatrists, and even experienced neurosurgeons, who like to have on their desks a ready reference book, to which they can refer themselves and which they can recommend without reservation.

RAEBURN C. LEWELLYN, M. D.

W. B. SAUNDERS COMPANY features the following recent books in their full page advertisement appearing elsewhere in this issue:

CHERNIACK AND CHERNIACK—RESPIRATION IN HEALTH AND DISEASE
Clearly explains the mechanisms by which pathological processes produce clinical findings in respiratory disease

FLUHMANN—THE CERVIX UTERI
Fully covers diagnostic, clinical manifestations, medical and surgical management

TENNEY AND LITTLE — CLINICAL OBSTETRICS
Authoritative management of 24 problems which currently cause difficulty in safe delivery

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PUBLICATIONS RECEIVED

(Certain ones of these will be selected for review)

Grune & Stratton, N. Y.: Hypertension, a Mount Sinai Hospital Monograph, edited by Milton Mendlowitz, M. D.

F. W. Dodge Corp., N. Y.: Hospitals, Doctors, and Dollars.

Doubleday & Co., N. Y.: A Traveler's Guide to Good Health, by Colter Rule, M. D.; Memoirs of a Medico, by Dr. E. Martinez Alonso; Good-Bye, Doctor Roch, by André Soubiran and translated by Helen Sebba.

The C. V. Mosby Co., St. Louis: Relief of Symptoms, by Walter Modell, M. D. (2nd edit.); Medical Pharmacology, Principles and Concepts, by Andres Goth, M. D.